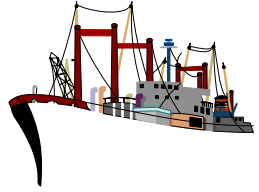




# Information Brief



**10 DEC 2003**  
**US Merchant Marine Academy**

**Mr. Jon Kaskin**  
**OPNAV N42**



# Briefing Outline



- **Definition of Strategic Sealift**
- **Sealift Requirements**
- **Sealift Assets**
  - Commercial
  - Government
- **Sealift Acquisition Programs**



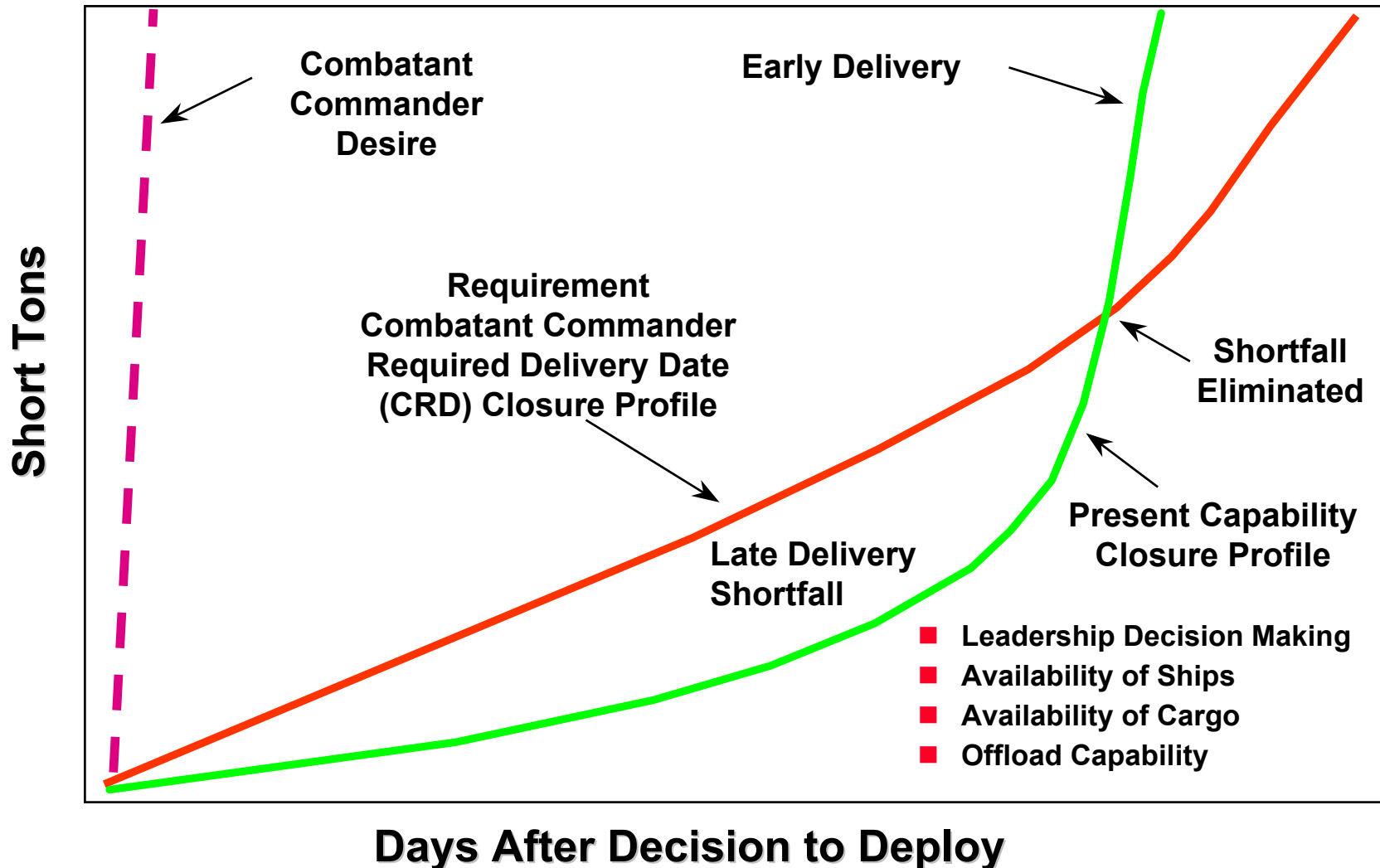
# Definition of Strategic Sealift



- **The Transportation of Surge Unit Equipment, Sustaining Ammo, Petroleum, and Supplies**
- **Prepositioning of Military Cargoes Afloat**
- **Systems to Move Shipborne Cargo Ashore**



# Total Delivery Requirements





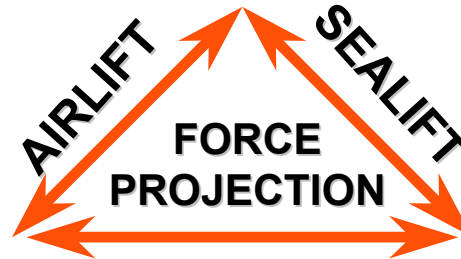


# Balanced Mobility



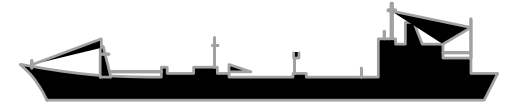
## AIRLIFT

- Fast
- Limited Capacity (5%)



## SURGE SEALIFT

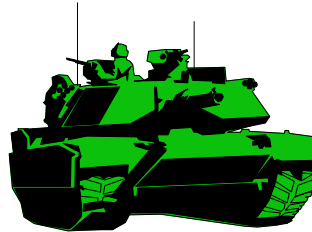
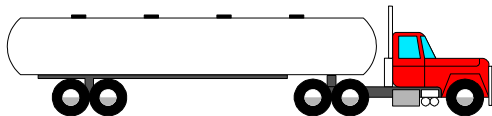
- Cost Effective
- Large Capacity (95%)



**PREPOSITIONING**

## PREPOSITIONING ASHORE

- Europe
- SWA
- Korea

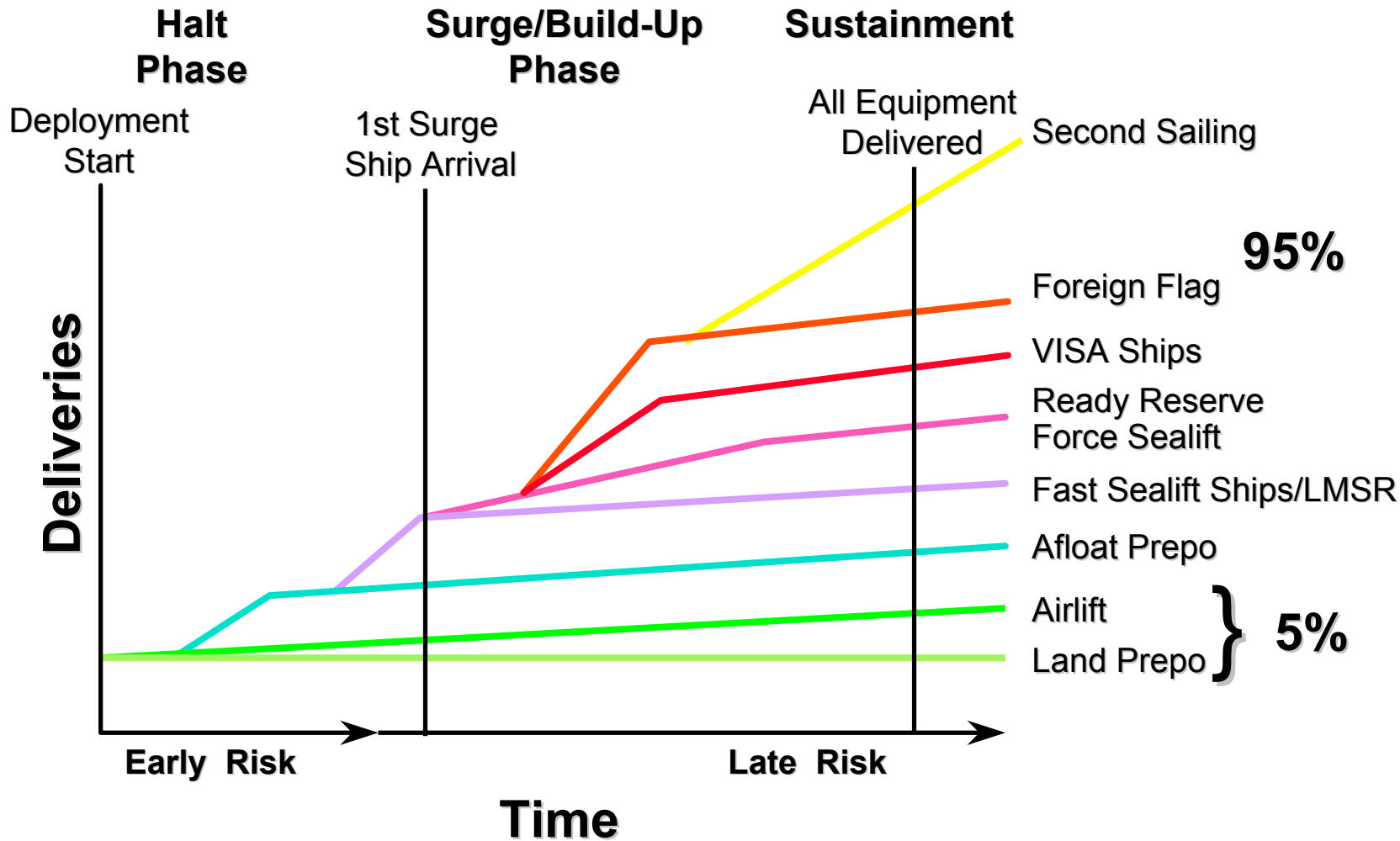


## PREPOSITIONING SEALIFT

- MPS (USMC)
  - Guam
  - Mediterranean
  - Diego Garcia
- APS (Army/USAF/Navy/DLA)
  - Guam
  - Mediterranean
  - Diego Garcia

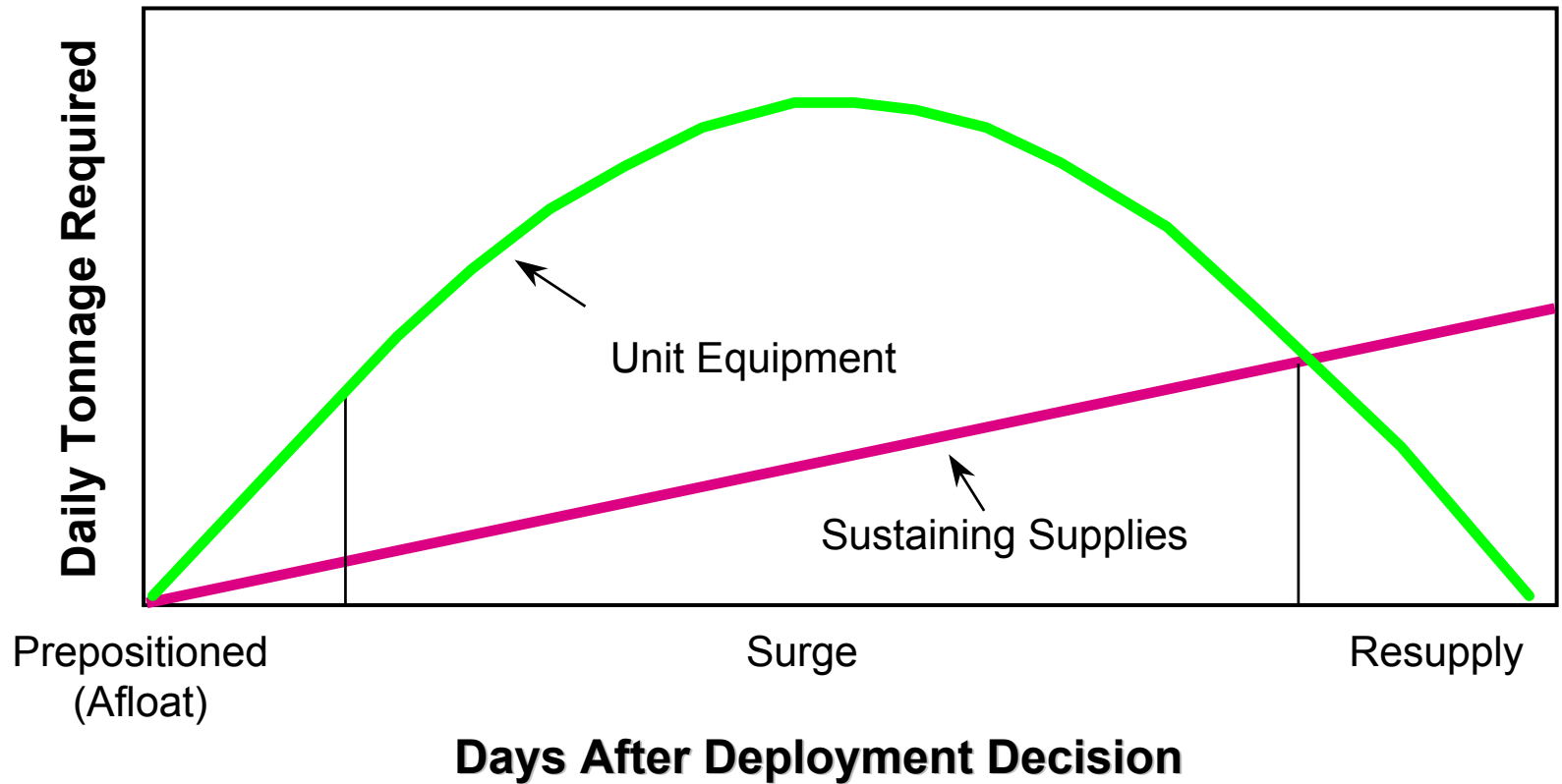


# Generic Mobility Options



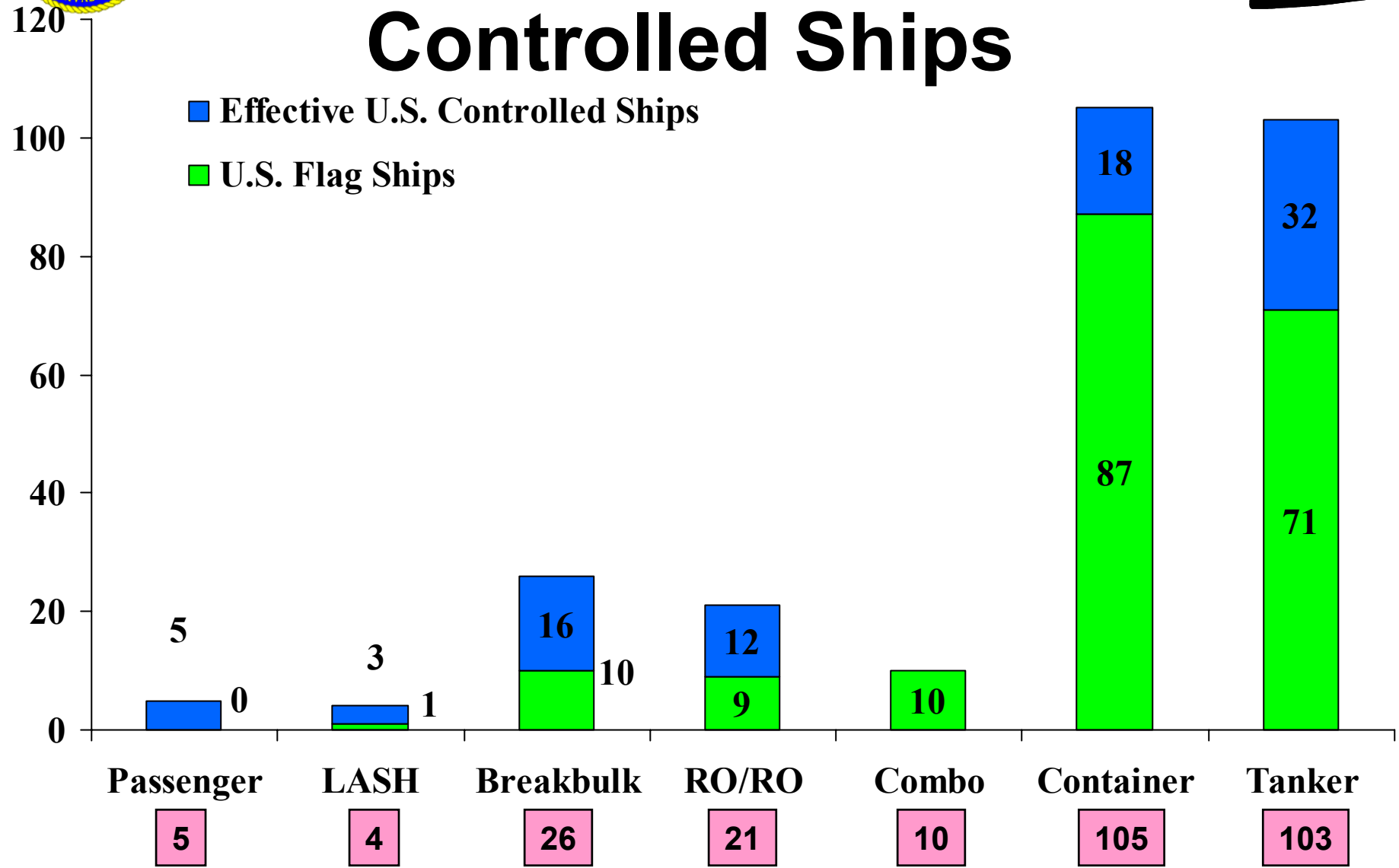


# Sealift Requirements





# Militarily Useful U.S. Flag and Effective U.S. Controlled Ships



As of 01 OCT 02

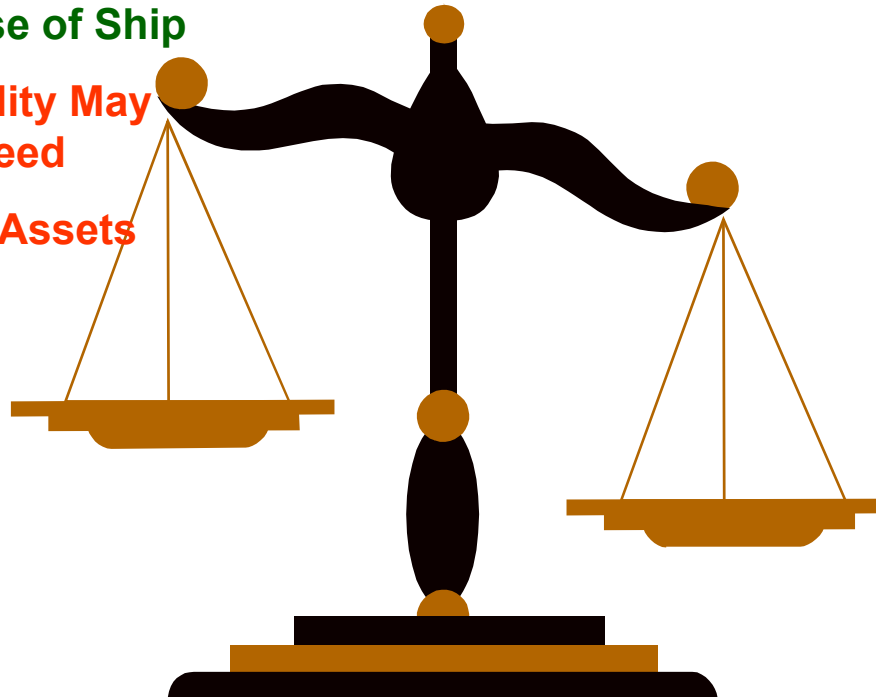


# Mobility Challenge



## Commercial Capability

- Charter As Required -- Cost Limited To Actual Use of Ship
- Commercial Capability May Not Match Military Need
- Delay in Access To Assets



## Organic Capability

- Immediate Access to Capability.
- Includes Unique Capabilities Not Available in Commercial Sector
- Requires Large Capital Investments
- Ongoing requirement to fund Operations and Maintenance



# The Challenge



- **Adequate Number of Ships to Meet RDD's**
- **Type:**
  - Matched to Cargo
- **Availability:**
  - Matched to Deploying Unit Availability
- **Capacity:**
  - Matched to CINC Warfighting Requirement



# Evolution of Mobility Requirements



**Jan 92**

## **Mobility Requirements Study (MRS)**

- 1999 Threat
- SouthWest Asia Scenario Sealift Driver
- Generated Requirements for LMSR Program
  - 2 Million Sq Ft afloat prepo/3 Million Sq Ft of Surge Sealift
- RRF Expansion

**93 - 94**

## **Significant Changes Since MRS**

- Bottom Up Review
- Downsized Force Structure
- 2 MRC Strategy

**Mar 95**

## **MRS BURU**

- 2001 Threat
- 10 Million Sq Ft of Surge Sealift
- RRF Reduction

**May 97**

**QDR: No changes**

**Jan 01**

**MRS-05: Sealift - No changes**

**Airlift - Additional procurement**

**Oct 01**

**QDR: No Surge changes**

**Joint Staff Heavylift study**

**FY 04/05**

**Mobility Capabilities Study**



# MRS Sealift Requirement Driver



- **Southwest Asia MRC Principal Scenario**
  - All Others Secondary, Does Not Address Dual MRCs
- **Moderate Early Risk (C+14)**
  - Heavy Brigade
- **Moderate Late Risk**
  - 2 Heavy Divisions (C+30)
  - Combat Forces (C+52)  $4 \frac{2}{3}$  Divisions Total
- **Medium Confidence/Medium Cost Option**





# MRS Integrated Plan



~~✓ **Interim Prepositioning Program:**~~

- ~~– Interim Charter Ships (Thru FY97)~~

~~+~~

✓ **Prepositioning Program:**

- Build 8 Large Medium Speed RO/ROs (LMSR)

+

✓ **2 Prepositioned Container Ships**

+

✓ **Surge Sealift:**

- Build 6 LMSRs
- Buy & Convert 5 Containerships to LMSRs

+

■ **RRF :**

- 104 Dry Cargo Ships
- 36 Tankers

+

✓ **Continued C-17 Program**



# MRS BURU (1995)



- Validated MRS LMSR & RRF RO/RO Acquisitions
- Modified MRS Plan as Follows:
  - Shift 1 LMSR Or 2 RRF RO/ROs From Surge To Prepo Role
  - Reduced RRF From 104 To 65 Dry Cargo Ships
  - Established Afloat Prepositioning Requirement Of 4.3M sqft
  - Established Requirement For 10M SqFt CONUS Surge By 2001:

• FSSs:	1.3M
• LMSRs	3.0M
• <b>RRF Other</b>	<b>1.6M</b>
• <b><u>RRF RO/RO (36)</u></b>	<b><u>4.1M</u></b>
Total	10M
- Validated 120, C-17 Buy. Established MTM/D Requirement Range (49.4 - 51.8 MTM/D)



# MRS 2005



## ■ FY 2005 Strategic Sealift Fleet Adequate

- Early Activation of Commercial Sealift Through The Voluntary Intermodal Sealift Agreement (VISA) And Containerization Of Army Unit Equipment Reduces Closure By 2 To 3 Weeks
- Heavy Lift requirements can be satisfied by transporting assets in cradles on organic sealift

## ■ FY 2005 Strategic Airlift Fleet is Sufficient For Two Sequential MTWs If The Total Fleet Is Dedicated To The Strategic Flow

- Additional Demands For Strategic Airlift Exist Outside Of The MTW Strategic Flow (e.g., Intratheater Requirements)
- Additional C-17s May Be Required
- New MTM/D (CRAF & Organic) Objective of 54.5 MTM/D

**Future Sealift Requirements Tending Toward High Speed**



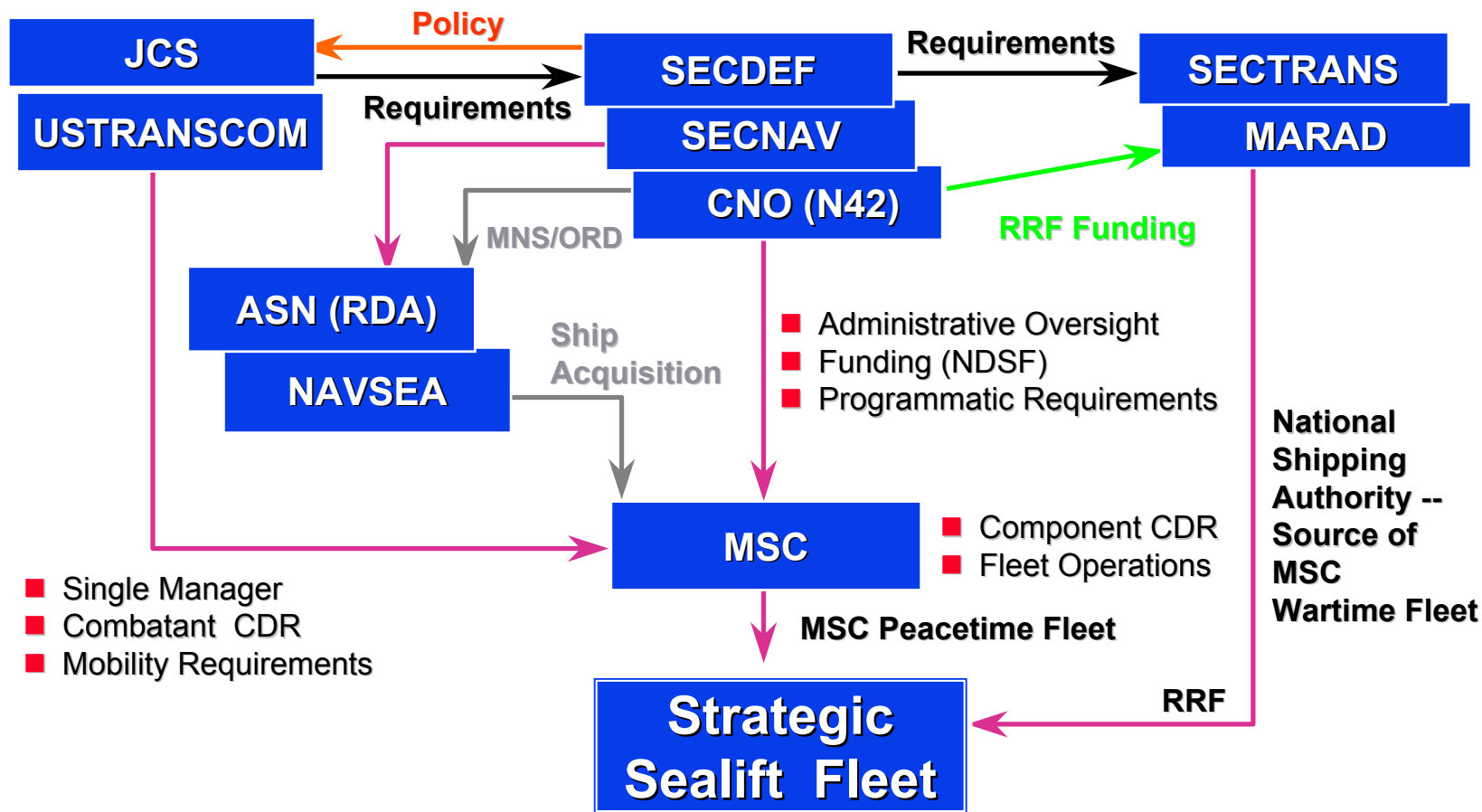
# Heavy Lift Study



- **The Defense Planning Guidance 2003-2007 directed Navy to complete a study to address heavylift requirements.**
- **Recommendations**
  - Cancel cradle program, long-term Navy MIW program precludes the need for long-term transportation solution.
  - Forward station MCM vessels in the Pacific AOR to meet combatant commander requirements.
  - Until vessels are forward stationed, spot charter FLO/FLO vessels when required.
  - USTRANSCOM and MARAD should enroll at least two heavy lift vessels in the MSP to support FLO/FLO operations.



# Sealift Team Is Complex





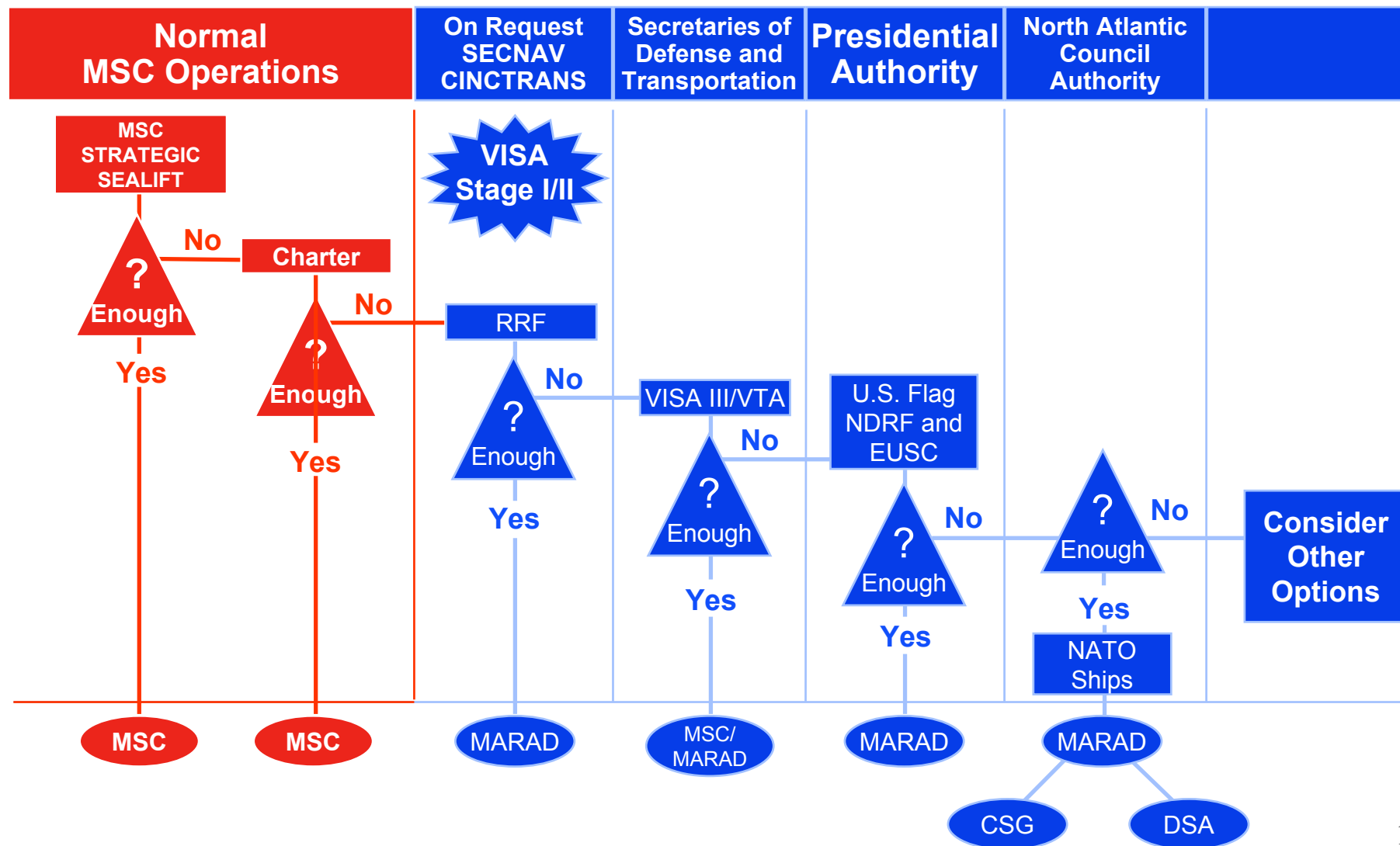
# National Security Sealift Policy



**“...First, the U.S.-owned commercial ocean carrier industry, to the extent it is capable, will be relied upon to provide sealift in peace, crisis, and war. This capability will be augmented during crisis and war by reserve fleets comprised of ships with national defense features that are not available in sufficient numbers or types in the active U.S.-owned commercial industry...”**



# Normal Sequence of Sealift Force Activation





# Organic Sealift MSC Strategic Sealift Force



## ■ **Dry Cargo And Tanker Fleet (10 Ships)**

- Sized To Meet DoD Requirements That Cannot Be Met By Scheduled Commercial Sources
- Ships Under Charter To MSC
- 4 Government owned T-5 tankers

## ■ **Afloat Prepositioning (33 Ships)**

- Used To Meet MTW And SSC Early Requirements
- Includes Ships Under Charter (19), MPF (E) (3), LMSRs (8), And RRF (3) Ships

## ■ **FSS and LMSR Surge Ships and Hospital Ships Maintained in Reduced Operating Status (ROS) (20 Ships)**

- Restrictions On Ships' Use To Move Peacetime Cargo



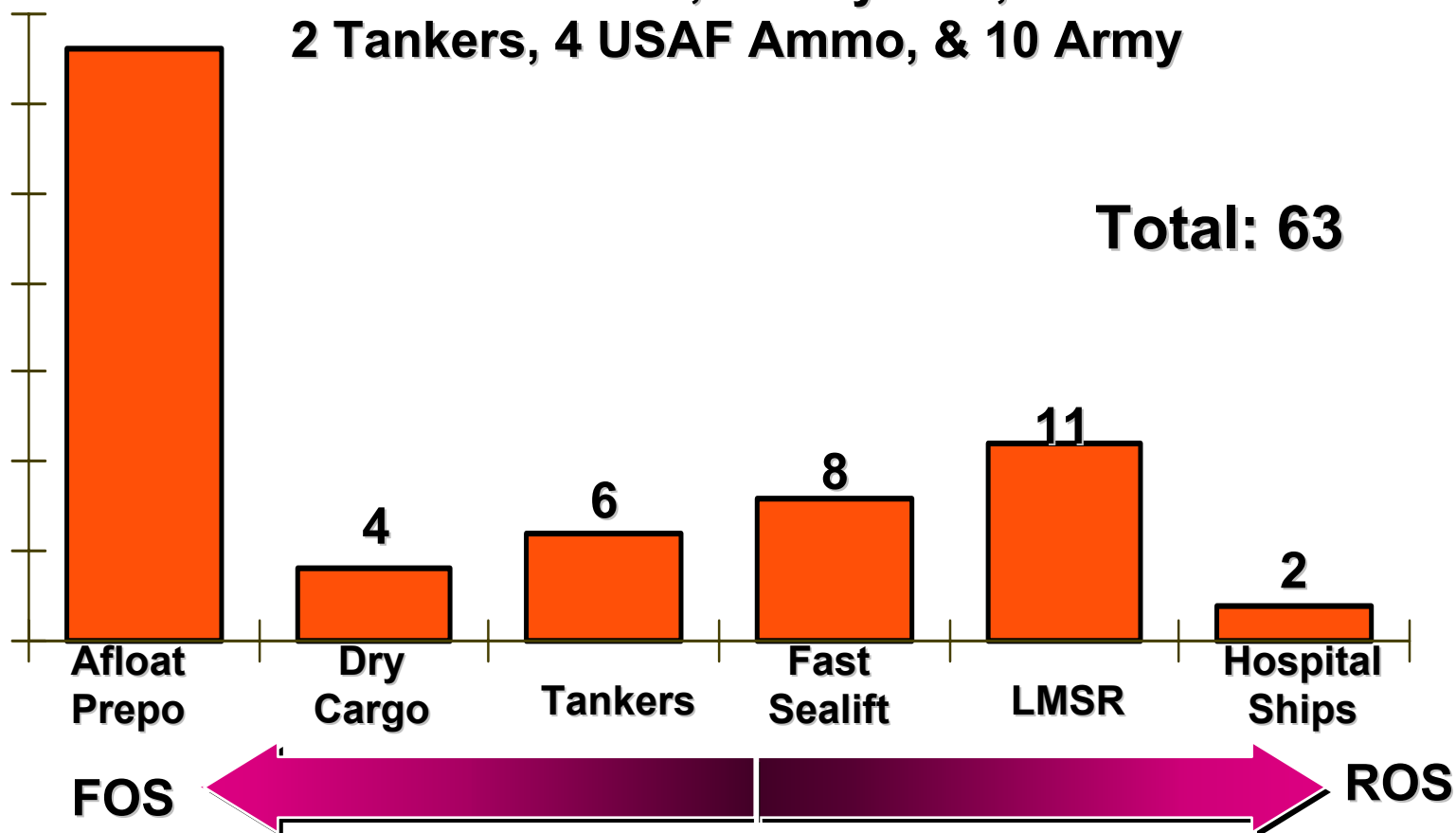


# MSC Strategic Sealift Force

## 1 DEC 2003



**33 - Includes 16 MPS, 1 Navy APF,  
2 Tankers, 4 USAF Ammo, & 10 Army**





# Today's MPF



- **Three Squadrons Comprising 16 Ships**
  - MPS-1 - Atlantic (5)
  - MPS-2 - Diego Garcia (6)
  - MPS-3 - Pacific (5)
- **Personnel By Air, Equipment/Material By Sea**
- **Ships Offload At Available Port Or In-Stream**
- **Requires Secure Area**
  - Arrival/Offload Of Ships And Aircraft
  - The Joining Of Personnel And Material
- **Current Leases Expire By Year 2010**



# Maritime Prepositioning Ship (MPS)



## Maersk Line

LOA: 756'  
Beam: 90'  
Draft: 33'  
Speed: 16.4 kt  
DWT: 23,000 TN

140,000 ft<sup>2</sup>  
378 TEU

Diesel  
Range: 15,000 NM





# NASSCO Conversion



**Large, Modern  
High-Speed  
Containership**



**Strategic  
Sealift Ship**







# USNS BOB HOPE



**AVONDALE NEW  
CONSTRUCTION**

**LOA: 950'  
Beam: 105.8'  
Draft: 34.6'  
Speed: ~24 kt  
DWT: 27,000LT**

**387,000 ft<sup>2</sup>**

**Diesel  
Range: 12,221  
NM**





# LMSR Key Parameters



## ■ Total Capacity:

- Prepo - 2M SqFt (APS3)
- Surge - 3M SqFt

## ■ Capacity Per Ship:

	<u>Total</u>	<u>Enclosed</u>
— Conversion:	300K SqFt	225K SqFt
— New Construction:	380K SqFt	300K SqFt

## ■ RO/RO & LO/LO Cargo Handling Capability

## ■ Load/Offload in 96 Hours Pierside

## ■ Sustained Speed 24 Knots

## ■ Range 12,000 NM

## ■ DWT 19,000 LT

## ■ PANAMAX



# Fast Sealift Ship (FSS)



**USNS  
CAPELLA**

**LOA: 946'  
Beam: 106'  
Draft: 37'  
Speed: 30+kt  
DWT: 24,000 LT**

**189K SqFt**

**Steam Turbine  
Range: 9,400 NM**





# FSS Key Parameters



## ■ Capacity Per Ship:

- ALGOL class 189K SqFt
- ANTARES class 183K SqFt

## ■ RO/RO & LO/LO Cargo Handling Capability

## ■ Load/Offload in 96 Hours Pierside

## ■ Endurance Speed 27+ Knots

## ■ Range 12,200 NM

## ■ DWT 14,300 LT

## ■ PANAMAX (breadth =106')





# T-AH 19 MERCY



**Built:** 1976  
**Converted:** 1985  
**LOA:** 862'  
**Beam:** 106'  
**Draft:** 33'  
**Speed:** 17.5 KTS  
**Steam Turbine**  
**Range:** 13,240NM  
**VERTREP Deck**

**O.R.:** 12  
**Beds:** 1,000  
    100 Acute care  
    400 Intermediate  
    500 Min. Care  
**Readiness State I**  
    # of Patients/day  
    300/day for 1day  
    200/day for 3days  
    100/day sustained







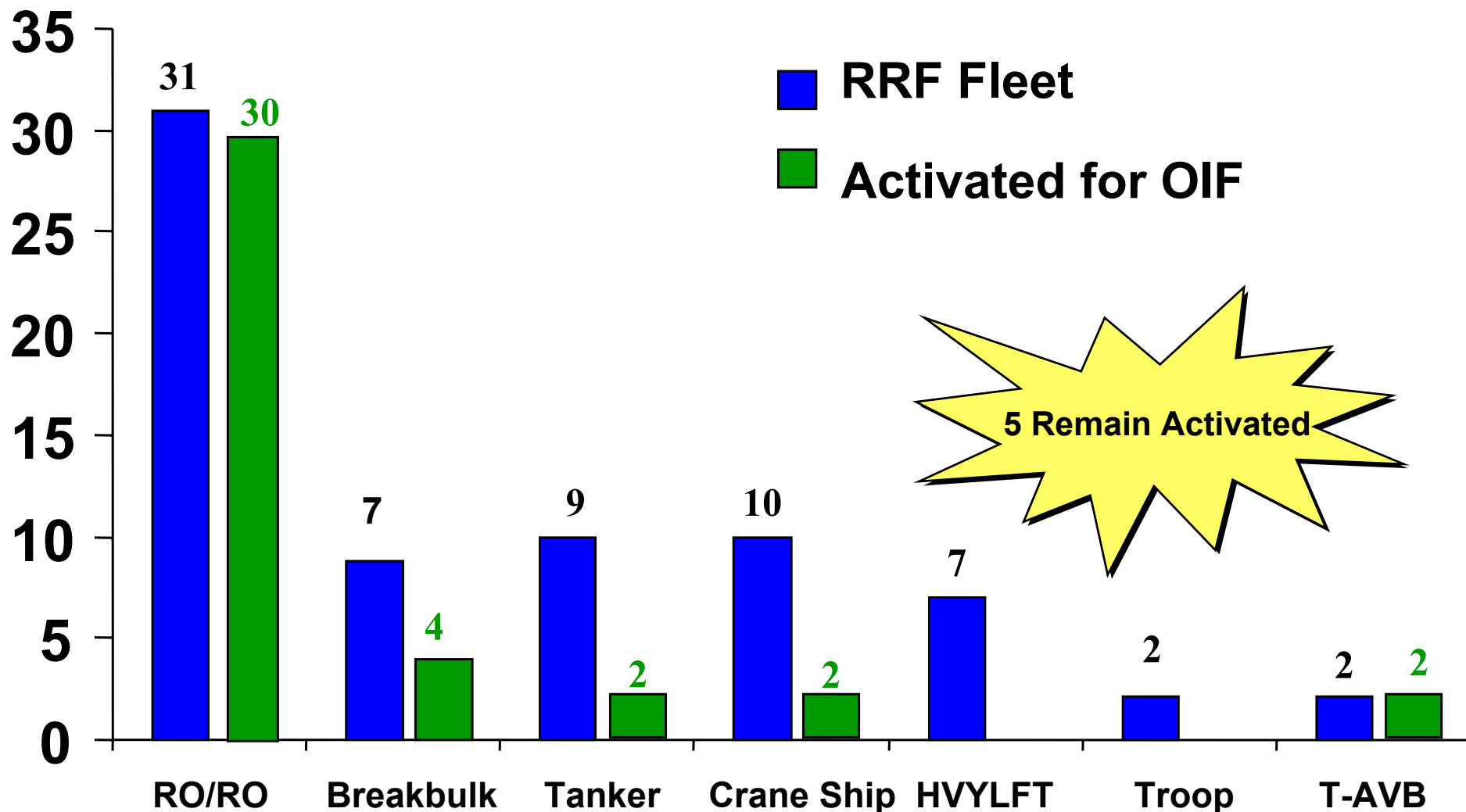
# Organic Sealift Ready Reserve Force



- **68 Ships Maintained In 4, 5, 10 and 20-Day Readiness Status**
- **Contains Dry Cargo Ships (RO/RO, Breakbulk, Heavylift, Auxiliary Crane Ships); Tankers; and Special Mission Ships (e.g., Aviation Logistics Support Ship)**
- **Significant Restrictions On Peacetime Use**



# Ready Reserve Force



5 Remain Activated



# RRF RO/RO



**Cape Orlando**

**LOA: 635'**  
**Beam: 92'**  
**Draft: 30'**  
**Speed: 16.2 kt**  
**DWT: 21,000TN**

**Cargo Capacity:**  
**Vehicle:**  
**204,000ft<sup>2</sup>**

**Diesel**  
**Range: 15,700 NM**





# LASH



**LOA: 893'**  
**Beam: 100'**  
**Draft: 41'**  
**Speed: 18.7kts**  
**DWT: 40,710**

**Diesel**  
**Range: 15,000 NM**





# Offshore Petroleum Discharge System (OPDS)



## American Osprey

LOA: 661'  
Beam: 90'  
Draft: 36'  
Speed: 16 kt  
DWT: 34,175

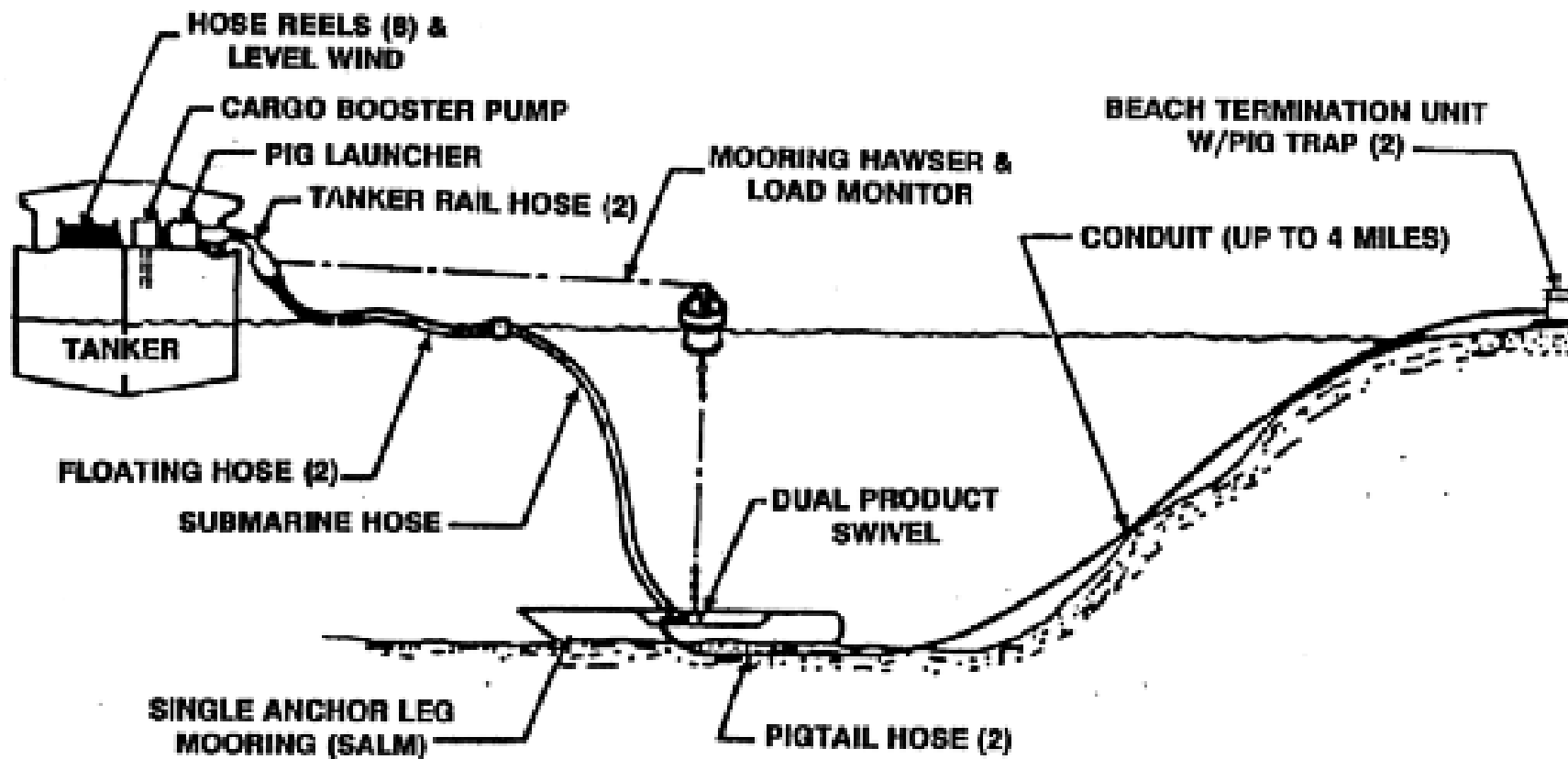
268,000 BBL

Diesel  
Range: 14,000 NM





# Offshore Petroleum Discharge System (OPDS)







# Auxiliary Crane Ship



**Flickertail State**

**LOA: 610'**  
**Beam: 78'**  
**Draft: 32'**  
**Speed: 17 kt**  
**DWT: 16,343**

**952,000 ft<sup>2</sup>**

**Diesel**  
**Range: 18,000 NM**





# Modular Cargo Delivery System (MCDS) Ship



## CAPE GIBSON

LOA: 572'  
Beam: 75'  
Draft: 30.5'  
Speed: 17.9 kt  
DWT: 13,000 LT

42,800 ft<sup>2</sup>

Steam Turbine  
Range: 13,300 NM

ROS Status: 5

CART Team:  
42 personnel to run  
Two stations





# Aviation Logistics Support Ship (T-AVB)



## SS WRIGHT

LOA: 602'  
Beam: 90'  
Draft: 34'  
Speed: 18.7 kt  
DWT: 15,694

Steam Turbine  
Range: 9,000 NM





# RRF Readiness



## ■ ROS-4 or ROS-5 Criteria:

- Require No Shipyard Activation Work
- Outported At Or Near Their Proposed Seaport of Embarkation
- Cadre Crew Aboard (9-10)

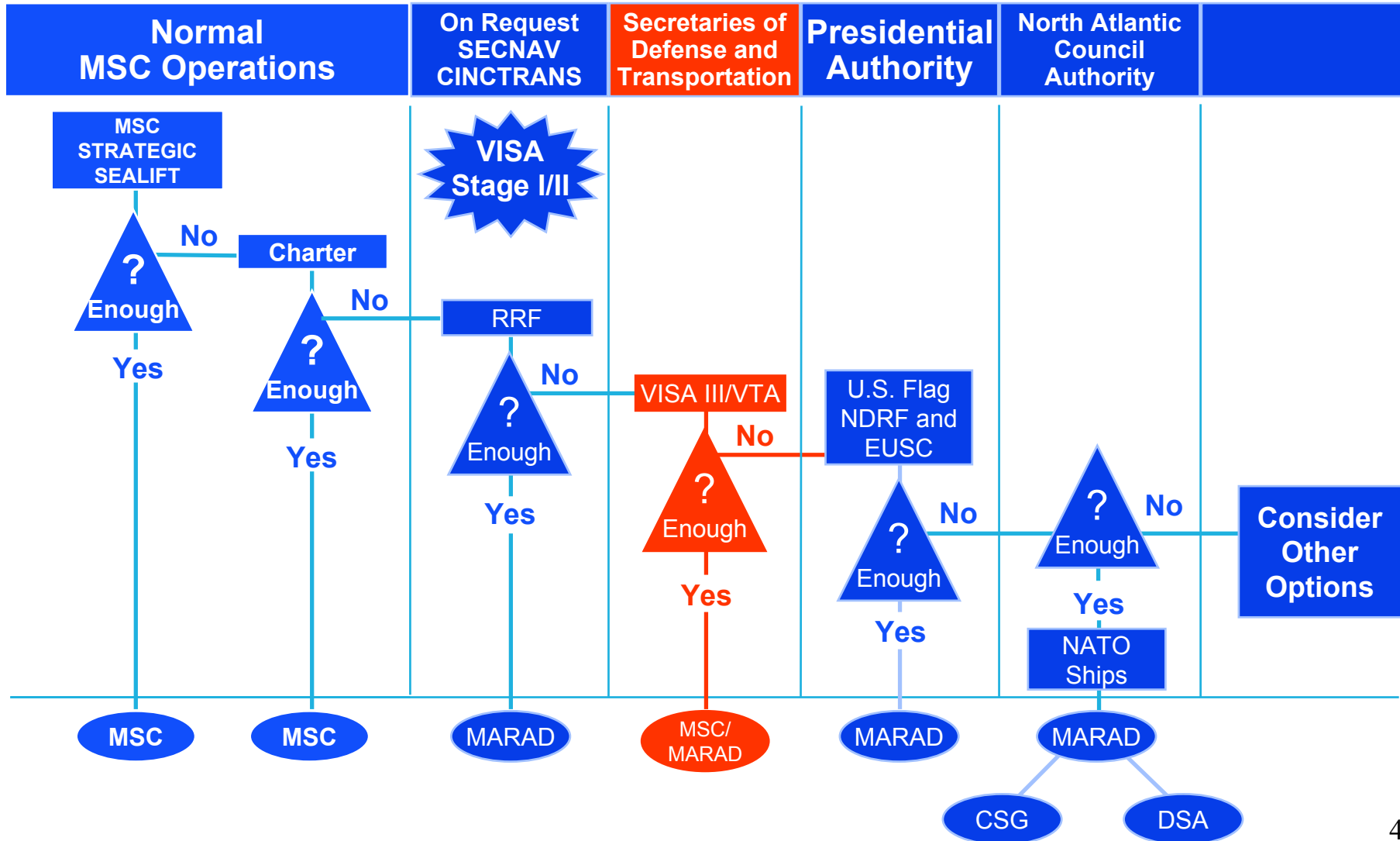
## ■ RRF Readiness Levels -- FY 2004

ROS-4	5 T-ACS
ROS-5	2 BB, 2 T-AVB, 27 RO/RO, 4 T-ACS, 2 SEABEE, 1 LASH, 1 OPDS
RRF-10	1 Troop, 1 Troop/BB, 1 BB, 4 RO/RO, 3 LASH, 1 SEABEE, 3 Tankers, 1 OPDS. 1 T-ACS
RRF-20	3 BB, 2 Tankers

\*Excludes 3 RRF Ships in Afloat Prepo (1 MCDS, 2 OPDS).









# SRP/VISA/VTA



## ■ Sealift Readiness Program (SRP)

- A Formal Agreement Between U.S. Flag Dry Cargo Carriers and MSC
- Similar to USAF CRAF

## ■ Voluntary Intermodal Sealift Agreement (VISA)

- Replacement for SRP
- Provides System Capacity Vice Ships/Containers (% of VISA Enrolled Capacity)

## ■ Voluntary Tanker Agreement (VTA)

- Provides for Voluntary Contribution by Owners and Operators of U.S. Flag & EUSC Tankers

## ■ Will be Activated Before Requisitioning If:

- Defense Requirements Not Met by Chartering
- Defense Requirements Met More Efficiently by Activating These Programs Rather than by Requisitioning Ships





# Voluntary Intermodal Sealift Agreement (VISA)



- **Partnership Between DoD, DoT and U.S. Flag Sealift Industry**
- **Program Originally Targeted To DoD Sustainment Shipping -- MRS 05 Shows Program Also Provides Up To .5M Stons Surge Sealift Capability**
- **Contractual Arrangement For Obtaining Time-phased Access To Militarily-useful U.S. Flag Commercial Dry Cargo Sealift Capacity, Infrastructure and Intermodal Capability To Support DoD Contingency Requirements**
- **Contingency Demand Driven: Stage I - 15%, Stage II - 40%, Stage III - 50%**
- **To Receive Preference For DoD Peacetime Cargo Business, A Carrier Must Enroll 50% Of Its U.S. Capacity In VISA**
- **MSP Participants Must Enroll 100% Of Ships' Capacity**

**“Sealift CRAF”**



# Maritime Security Program (MSP)

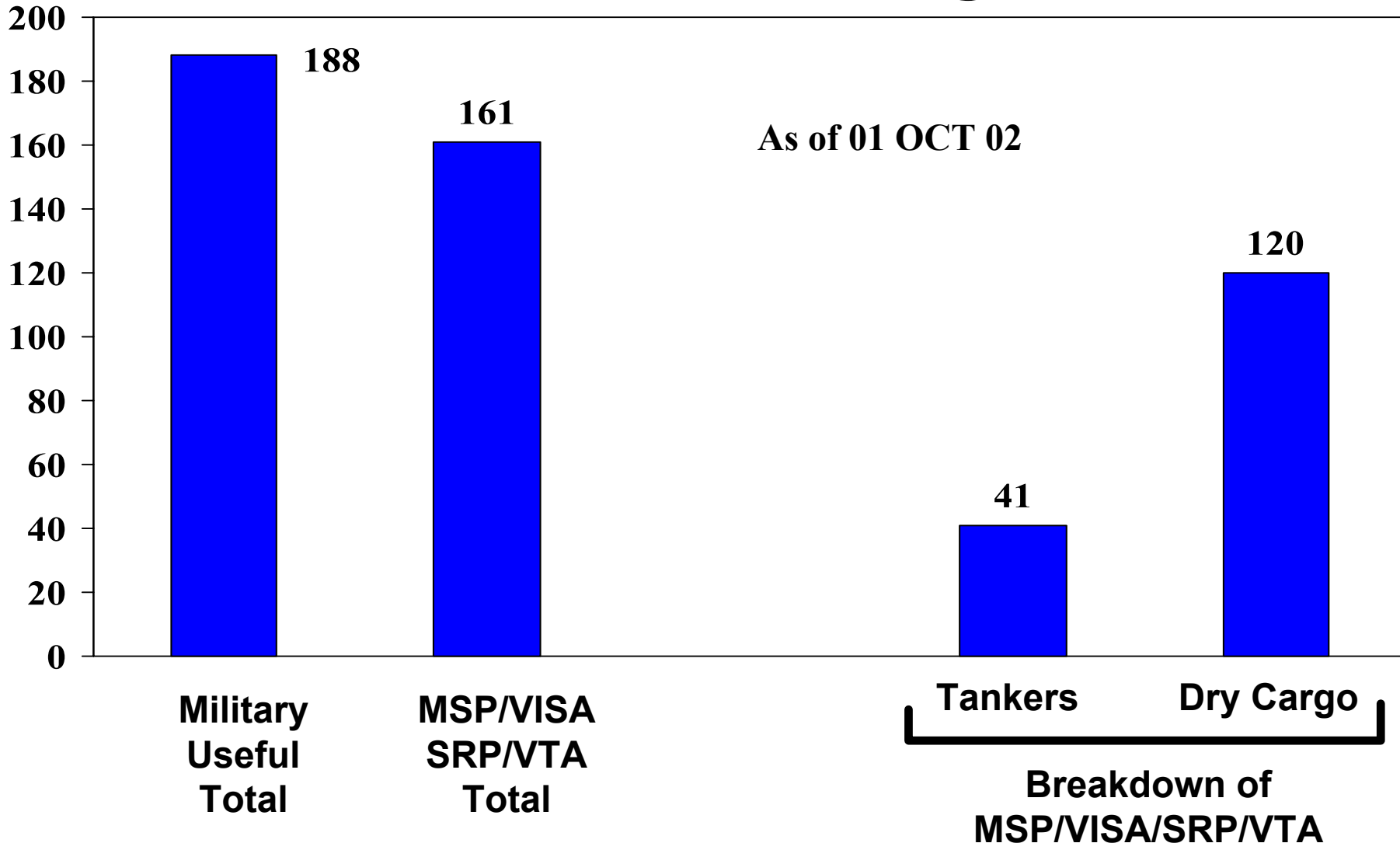


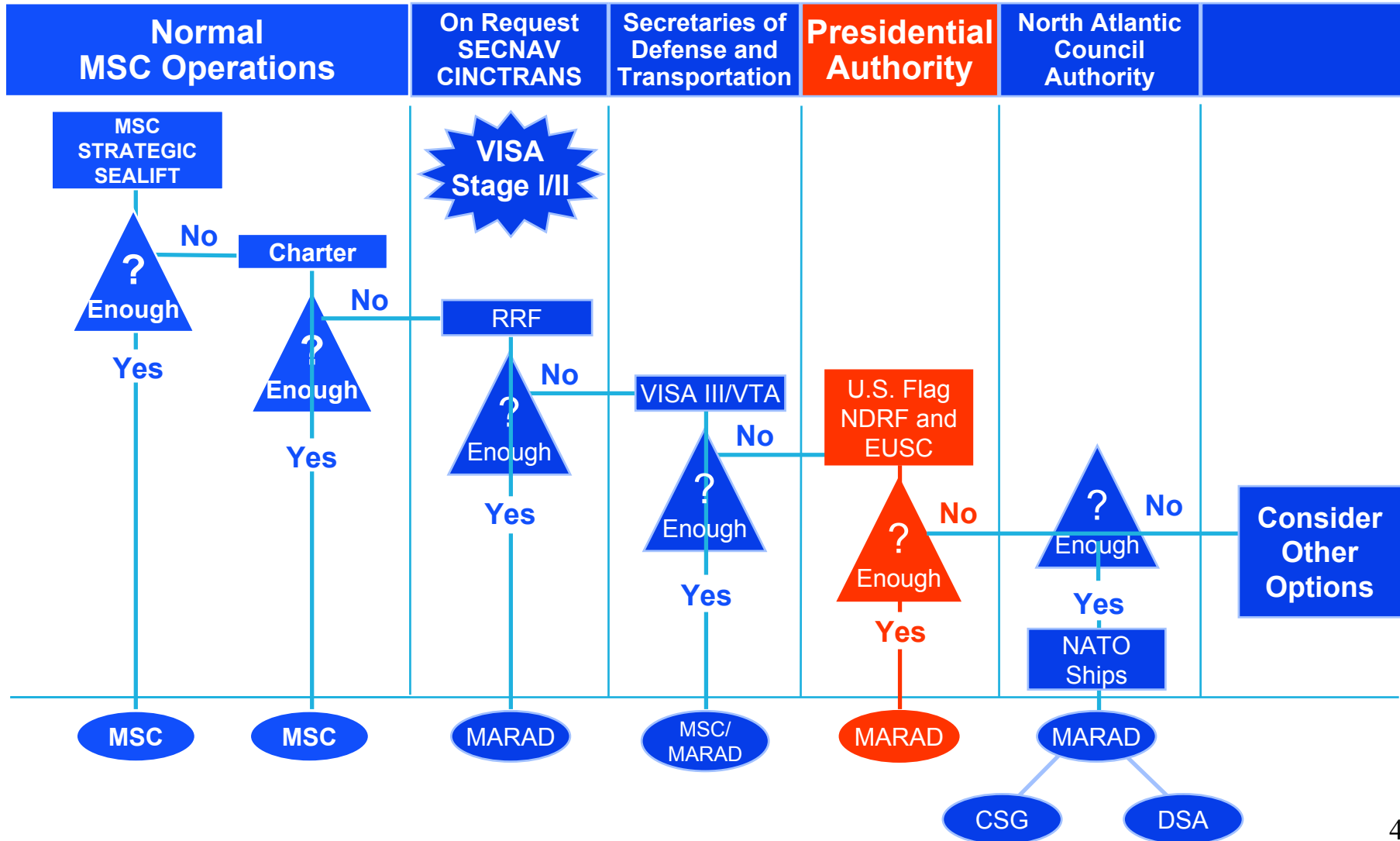
- Incentive Program To Increase DoD Access To Commercial Shipping and Strengthen Maritime Industrial Base
- 47 Ships Enrolled -- 38 Container, 1 LASH, 8 PCTC/Car Carriers
- Carriers Must Enroll In An Emergency Sealift Program Such As VISA.
- Carriers Receive \$2.1M Annual Program Payment thru 2005
- Must Be U.S.-Flagged -- Can Be Foreign Built
- Reauthorized in 2003 for 60 ships, including 5 product carriers (\$50 M/tanker), beginning in 2005 (\$2.6 – 3.1M) for 10 years

## 17 Ships Reflagged In Order To Participate In Program



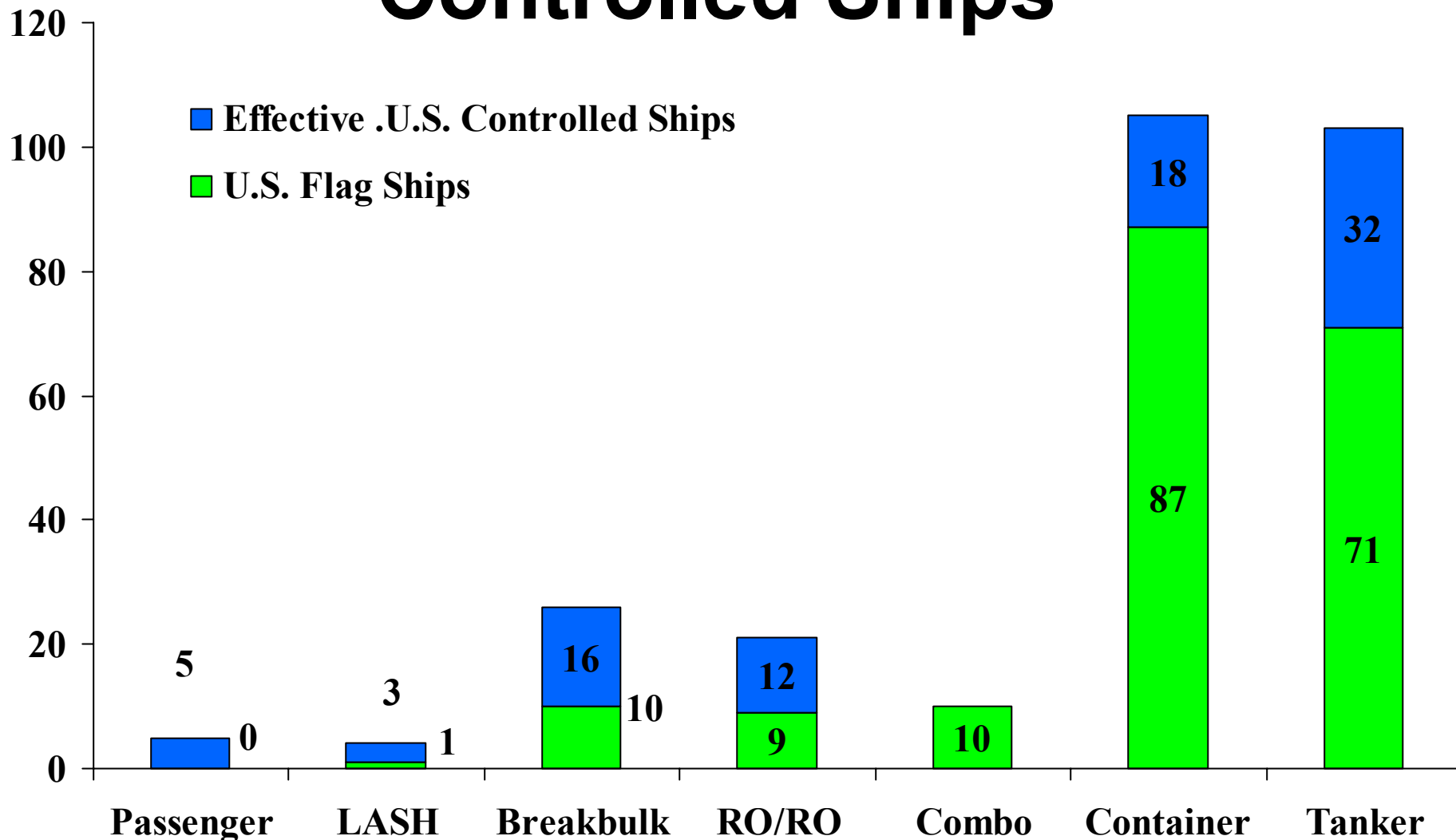
# Militarily Useful vs SRP/VTA (US Flag)







# Militarily Useful U.S. Flag and Effective U.S. Controlled Ships



As of 01 OCT 02



# Decline of U.S. Commercial Sealift



## ■ Foreign Trades

- U.S. Flagged Ships Not Competitive
  - Higher Crew And Operating Costs
  - Unattractive Tax Regime
- Cargo Preference Trades Declining
  - Agricultural Programs Cyclical and Diminishing
  - Military Cargo Dominate

## ■ Domestic Trades

- Tanker Fleet Declining
  - Alaskan Oil Output Decline
  - Barges / Pipelines Used For Coastwise Movements
  - OPA 90
- Dry Cargo Fleet Stable
  - Serves Alaska, Hawaii, Puerto Rico and Guam

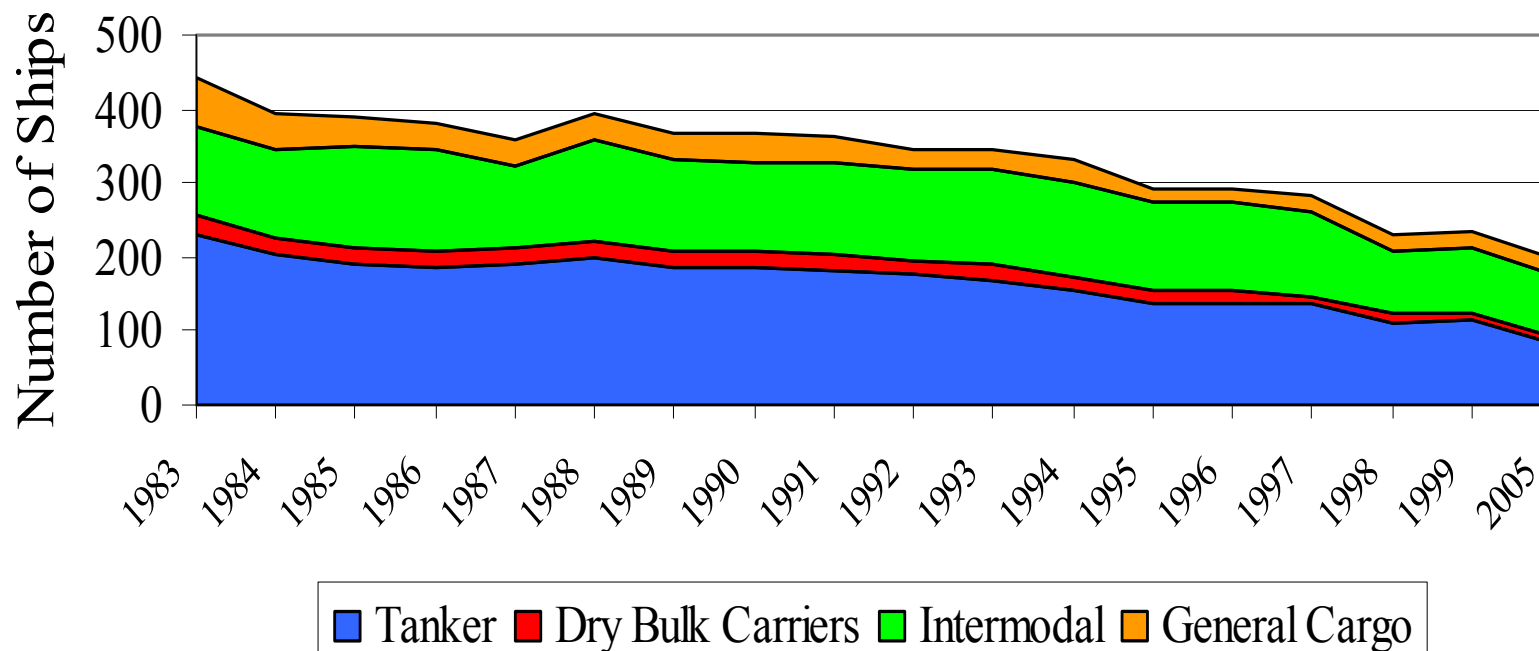
## Fewer Ships Suitable For Surge



# Commercial Sealift -- U.S. Flag Fleet



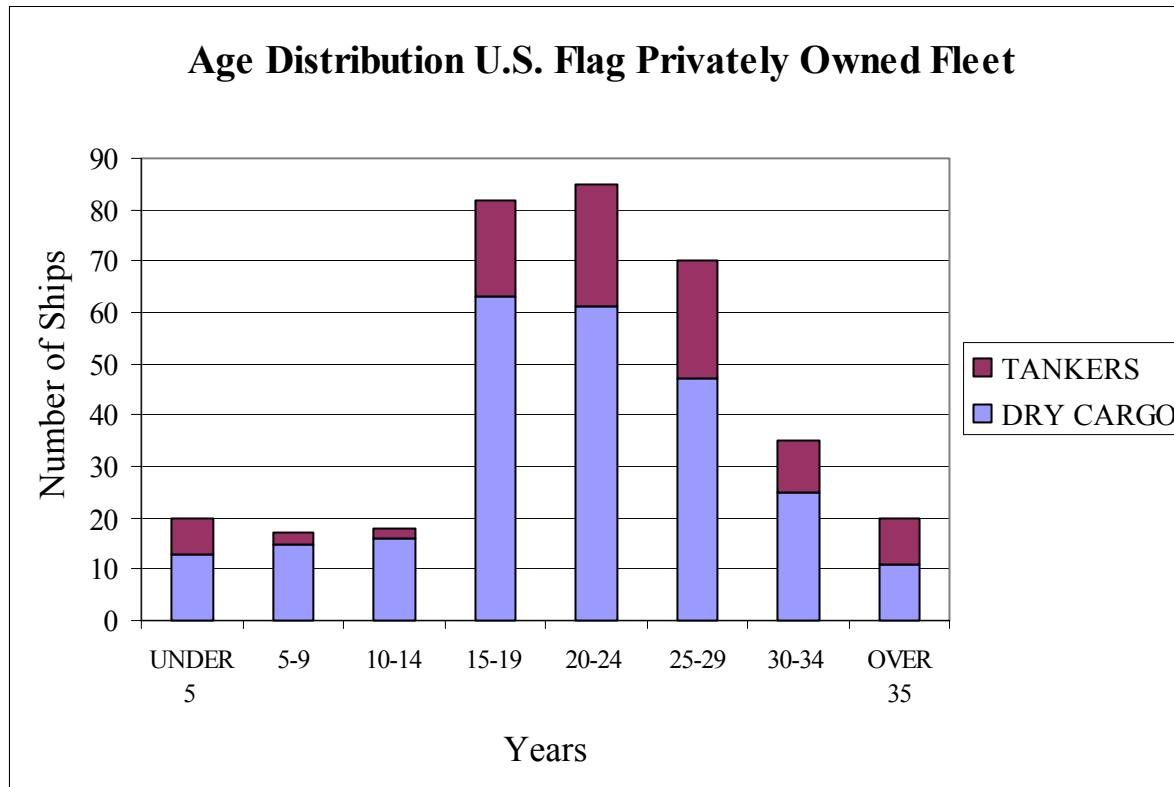
U.S. Flag Fleet By Type  
(1983 to 2005 [projected])







# An Aging Fleet....





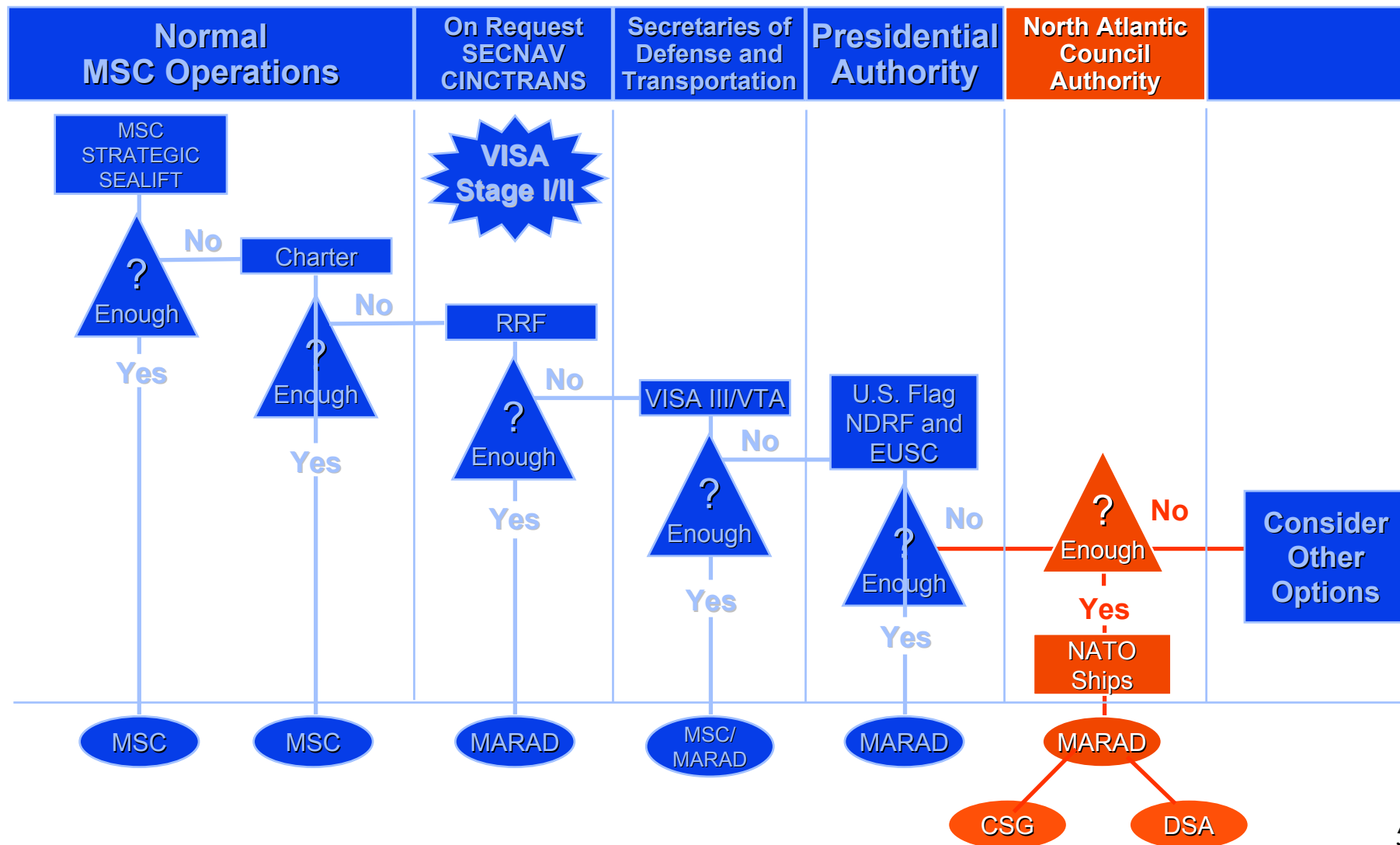
# **Government Controlled (MARAD) National Defense Reserve Fleet (NDRF)**



- **Maintained at 3 Anchorage Sites**
  - James River, Va
  - Beaumont, Tx
  - Suisun Bay, Ca
  
- **Contains 68 Militarily Useful Ships**
  - 48 Breakbulk Ships
  - 11 Tankers
  - 9 Other Types



# Normal Sequence of Sealift Force Activation





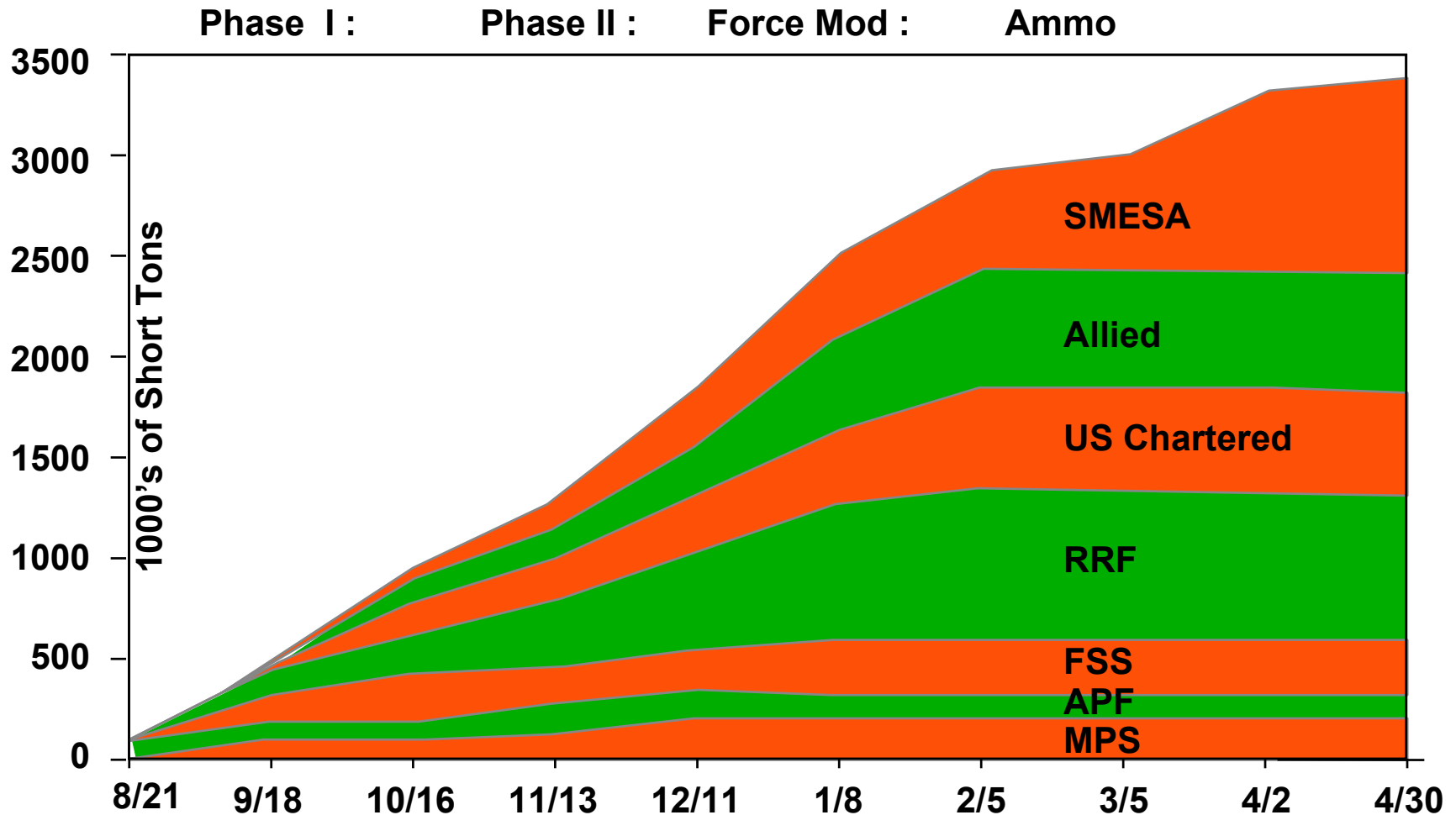
# NATO Sealift Ships List



- Last Updated 12 Sept 1997
- Further updates held in abeyance
- 426 Ships Identified
  - 330 Dry Cargo Ships
  - 14 Passenger
  - 82 Tankers



# Desert Storm Sealift Dry Cargo Delivery Profile





# Operation Iraqi Freedom (1 Dec 02 – 31 May 03)



*Delivered 45,800,000 Meals to Iraq*

*Loaded Cargo Covering  
18 million sqft*

## Population

**UK** 59.7 mil

**Norway** 45.2 mil

**S. Korea** 48.3 mil

**New York** 8 mil

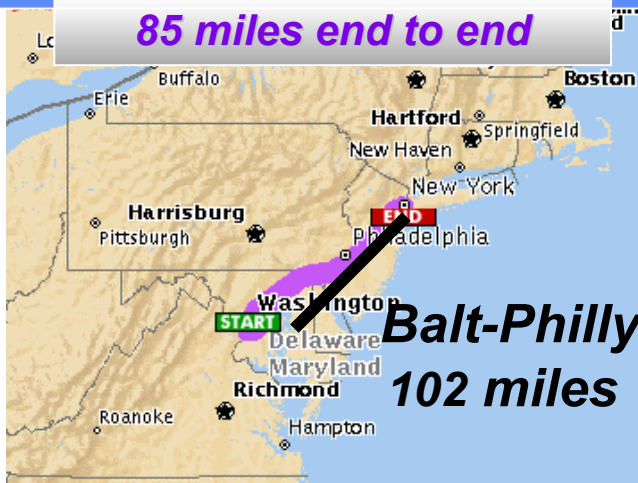
*Enough to feed  
NYC for 2 days*



*18 mil ft<sup>2</sup> =  
373 football  
fields*

*21,251 Containers (TEUs)*

*85 miles end to end*



*1.6 million tons of Equipment and Cargo*



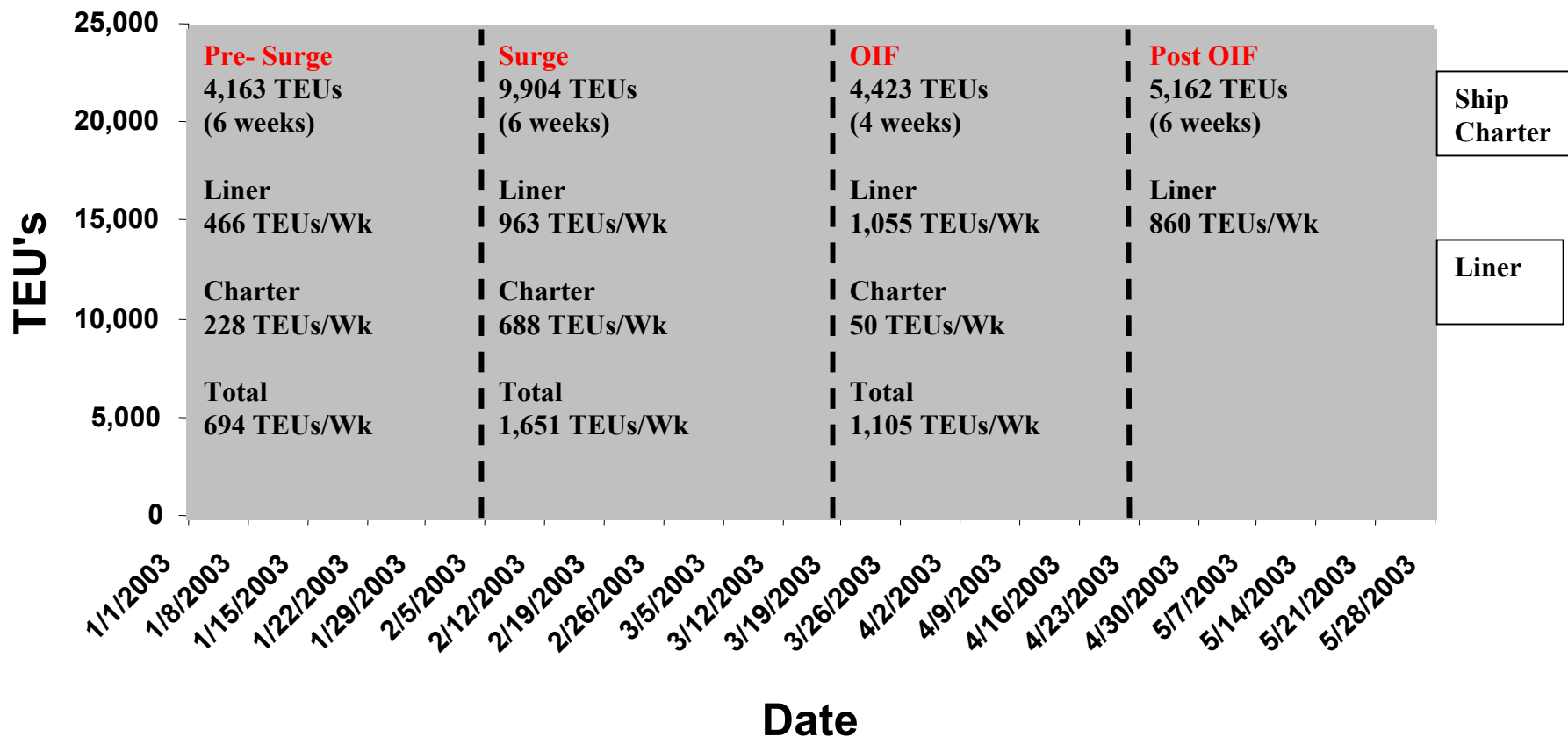
*Equivalent  
to 30,700  
747's  
airloads*

**Making a Difference for the Warfighter**





# OEF TEUs Shipped from CONUS



## OEF Total's

9,990 TEU's delivered prior to 1/1/03

30,261 TEU delivered from 9/11/01 until 6/1/03

5,500 TEU's delivered from prepositioned MPS

24,332 TEU's shipped from 1/1/03 to 6/1/03 from CONUS



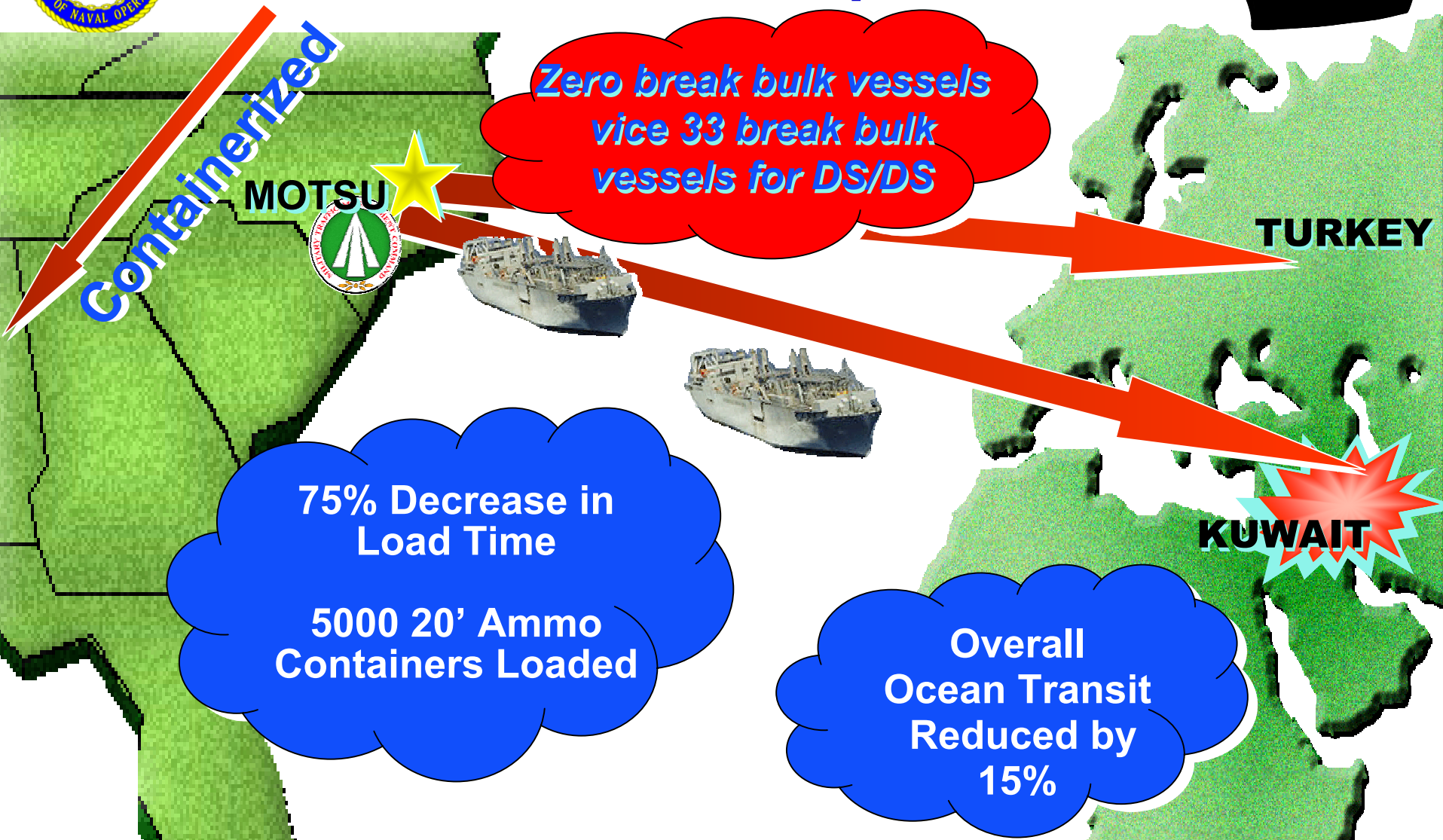
# Operation Iraqi Freedom 101<sup>st</sup> ABN (AASLT) Deployment



**Task Force Loading Improved Combat Capability**



# Operation Iraqi Freedom Ammunition Shipments



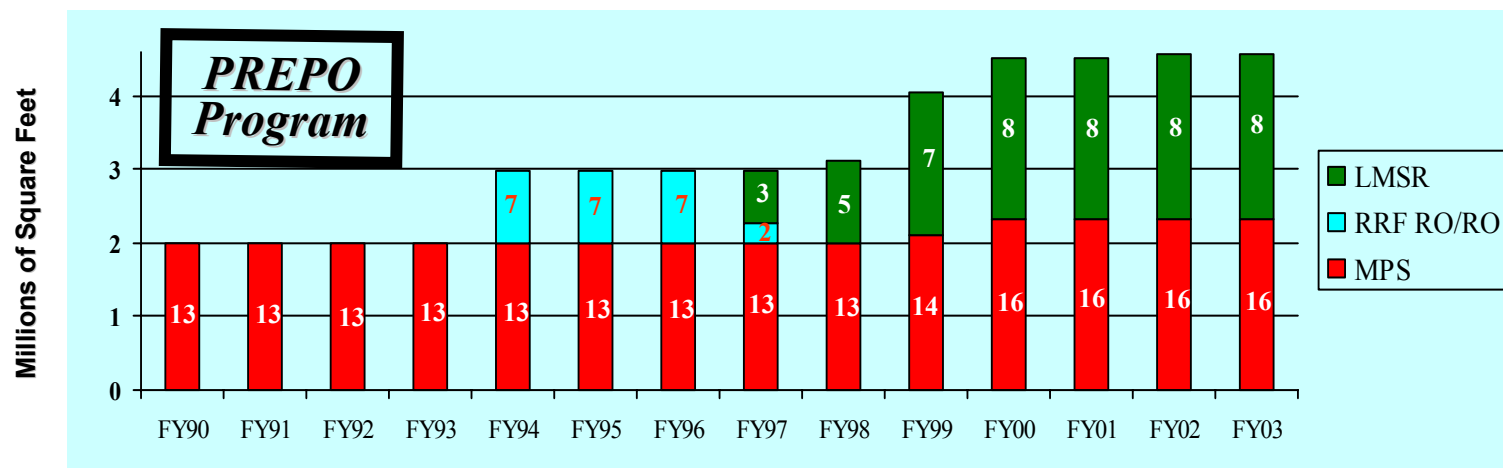
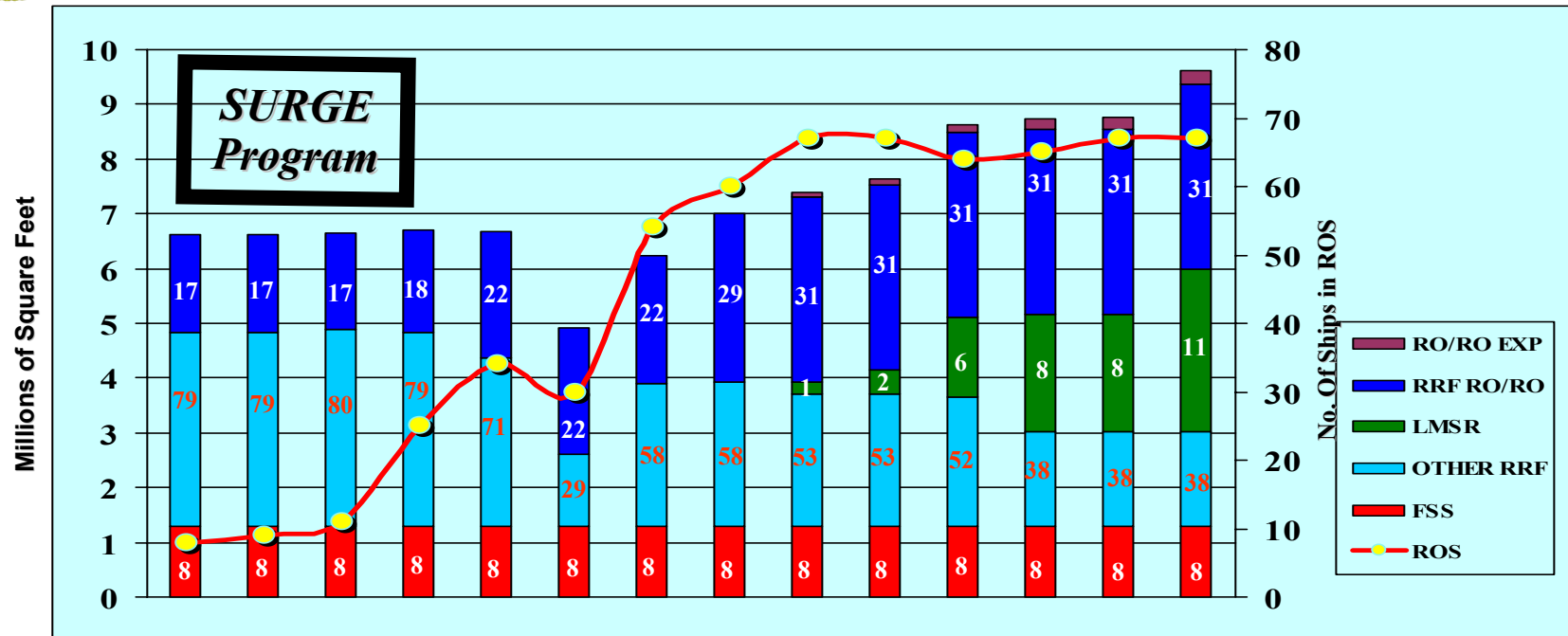
**Containerized Ammo Shipments: A Lesson Learned From DS/DS**



# STRATEGIC SEALIFT PROGRAMS

## SURGE & AFLOAT PRE-POSITIONING

Sized to Meet the Strategic Sealift Requirements for 1 MTW  
Can Lift the Army Objective Force of 4 Divisions in 30 Days





# Sealift Challenges 2005 - 2015

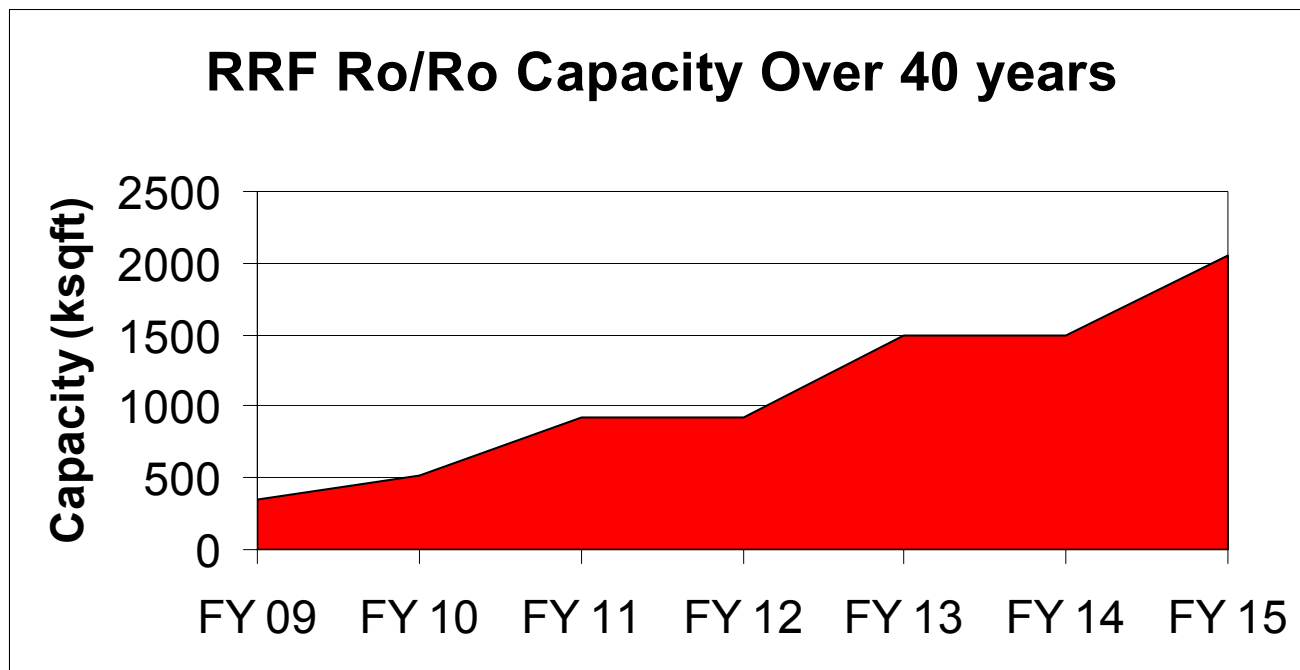


- **Economically Recapitalize Organic Sealift Fleet (RRF/FSS)**
  - MPF Buyout To Recapitalize RRF RoRo Capacity
  - Exploit High Speed Sealift Technology To Replace FSS
- **Maintain Commercial Capability To Support MCO And SSC Sustainment Shipping**
  - Reauthorize Improved MSP In FY 2005
- **Increase Reliance On Commercial Sealift Industry To Satisfy Surge Sealift Requirement**
  - National Defense Features (NDF) To Replace Lower Readiness Ships
  - Increase Use Of Container Shipping



# ***Challenge: Recapitalize Organic Fleet***

## **RRF Aging**







## ***Challenge: Recapitalize Organic Fleet*** **MPF Buyout To Replace RRF** **Capacity**



- **Three Squadrons Comprising 13 Leased Ships**
  - Provides 1.8M sqft Plus 6,551 TEU
  - Leases Expire 2009 - 2011
- **Three More Gov't Owned Ships Added**
  - Adds .5M sqft + 2,700 TEU
- **Purchase Of 13 Leased Ships Permits 5 - 10 Year Phased Replacement By MPF (Future)**
- **Retired MPS & MPS(E) Ships Fully Recapitalizes RRF Through 2015**
- **Cost Effective To Buy As Soon As Possible Even Without RRF Recapitalization**
- **MPF Ships Will Provide 15 - 20 Years of Service After 2011**

**Buyout Programmed For FY06 in POM 04**



# ***Challenge: Recapitalize Organic Fleet***

## **Replace FSS With High Speed Sealift (HSS)**



- **FSS Reach Age 40  $\cong$  2012**
- **Army leadership desires 70+ Knot Shallow Draft/High Speed Sealift (SD/HSS) for Objective Force transport.**
- **FastShip 38 knot design available for near term production**
- **OPNAV/DCSLOG/NAVSEA/TRANSCOM Working Group Developed Technology Development Plan (MARAD, ONR, DARPA Participating)**
- **Navy LCS award could lead to intermediate scale trimaran, SES and semi-planing monohull designs**
- **Ongoing Advanced Mobility Concept Study**
  - 75 KT SD/HSS
  - 60 KT Navy Vision SES
  - 55 KT Navy Vision Trimaran



## ***Challenge: Increase Reliance on Industry***

# **Containerization Of Unit Equipment -- MRS 05**



- Use of VISA Container Ship Capacity To Move .5M Stons Of Unit Equipment.
- Examined CS/CSS Units 100% Containerizable
  - Fit In a Container Or On Flat Rack



**Improved Force Closure By Weeks**

**No Army/AF Breakbulk in OIF!**



## ***Challenge: Maintain Commercial Capability***



# **Reshaped MSP**

- **MSP Expires 2005**
- **New Program Authorized for 10 years beginning 2005**
- **Escalating annual payments from \$2.6M To \$3.1M over the life of the program**
- **Ships mix needs to be re-prioritized (Congress increased ship level from 47 to 60 including 5 product tankers)**
- **DoD needs to establish military priorities:**
  - Heavylift
  - RO/RO – PCTC
  - Multi-purpose
  - Product Tankers



*Challenge: Increase Reliance on  
Industry*



# **National Defense Features (NDF) Concept**

- **Privately Owned And Operated Merchant Ships**
- **Crewed By U. S. Merchant Seamen**
- **Built In U.S. Shipyards**
- **Built With Navy Funded NDFs For Military Cargo**
- **Recallable For Military Contingencies**

**“Active RRF”**



*Challenge: Increase Reliance on  
Industry*



# National Defense Features

## ■ Examples of National Defense Features:

- Deck Strengthening And Hoistable Decks For Pure Car/Truck Carriers
- Self-Sustaining Features Such As Cranes or Provisions for Their Rapid Installation and Additional Electric Power to Operate Them on Container Ships
- Increased Speed
- Convertible Container / RO/RO Cargo Holds



# *Challenge: Increase Reliance on Industry* **NDF Military Benefits**



- **Could Be Used To Deploy Follow-On Unit Equipment And Sustainment**
- **Potential Partial Offset To Surge And Sustainment Shipping Requirements**
  - Depends On Ship Speed And Availability
  - Alternate To RRF Recapitalization (RRF-10)
- **Creates Pool of Ships Available To Respond To Crisis**
- **Increases Pool Of U.S. Merchant Mariners To Crew Sealift Ships**





*Challenge: Increase Reliance on Industry*

# NDF Program Issues



## ■ Current NDF Program Unattractive

- Limited To Funding Features, Installation, Maintenance, And Operational Penalties
- NDF Insufficient Incentive To Offset Increased Costs Of Building Ships In U.S. Shipyards except for Jones Act trades

## ■ Restructure NDF Program To Attract Participants

- Allow Shipping Companies To Receive Advance Payments For Future NDF Operating And Support Costs
- Expand Program To Compensate For Higher Capital Construction Costs  
(e.g. MSP tanker construction subsidy)



# **FUTURE STRATEGIC SEALIFT 2010 & BEYOND**



# MPF 2010 and Beyond

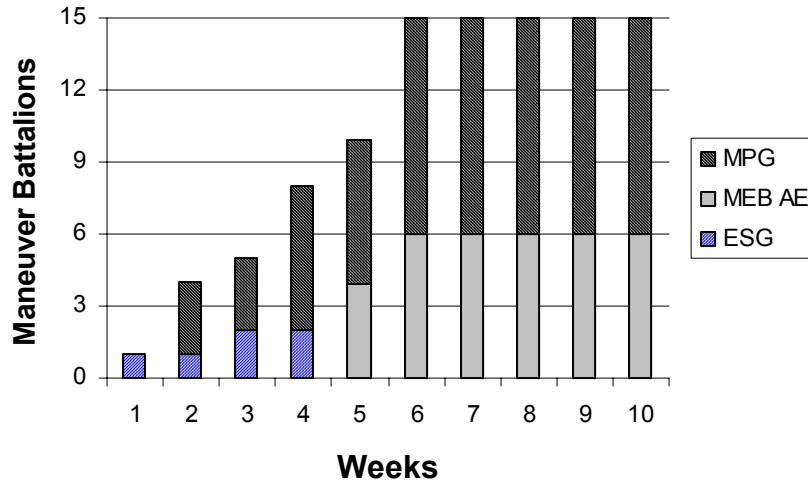


- **In Support Of Naval Concept Paper - Applying Principles of OMFTS and STOM**
- **Support Seabased Logistics**
  - Eliminates Need For Host-Nation Facility
  - Accommodations For Embarked MPF MAGTF Forces
  - Assembly And Staging Facilities
  - Facilities For Sea-Based C2 Of MPF MAGTF Ops.
  - Provide Indefinite Sustainment For Forces Ashore
  - In-Theater Reconstitution and Redeployment
- **Type And Number Of Ships - TBD**



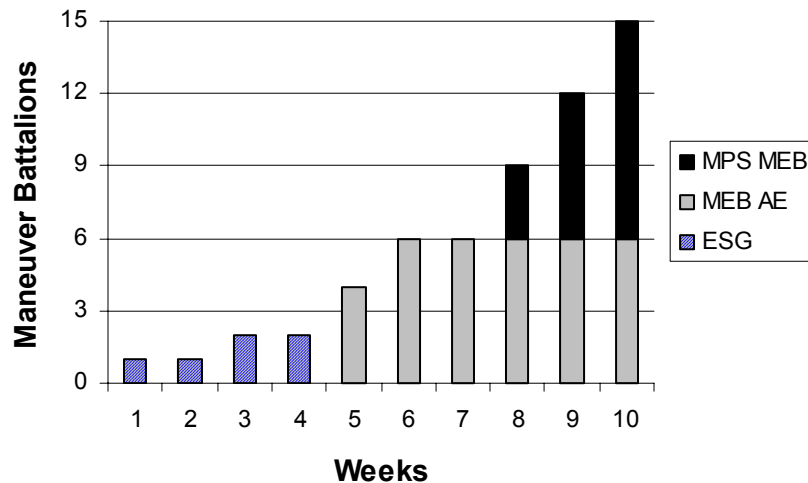


# EXW Force Closure



## Future CONOPs (Notional)

- 3 ESGs deployed (1 from each coast and 1 in Japan). 3 MPSRONS(F) pre-positioned.
- ESF (CSG/ESG/MPG) within 1-2 weeks.
- 1 MEB AE (including deployed ARG/MEUs) available from both LANT & PAC w/in 4-6 weeks.
- Maximum of 2.0 MEB AE and 3.0 MPF(F) MEB sea based (15 battalions total).



## Current CONOPs

- 3 ARG/MEUs deployed (1 from each coast and 1 in Japan). 3 MPSRONS pre-positioned.
- CVBG & 2 ARG/MEUs provide limited forcible entry capability w/in 3 weeks in 1 region.
- 1.0 MEB AE (incl. deployed ARG/MEUs) available from both LANT & PAC w/in 4-6 weeks.
- Following forcible entry, 3 MPSRONS offload and MEBs assemble ashore with gear.
- Maximum of 2.0 MEB AE sea based and 3.0 MEB shore based (15 battalions total).



# AoA MPF (F) Design Study

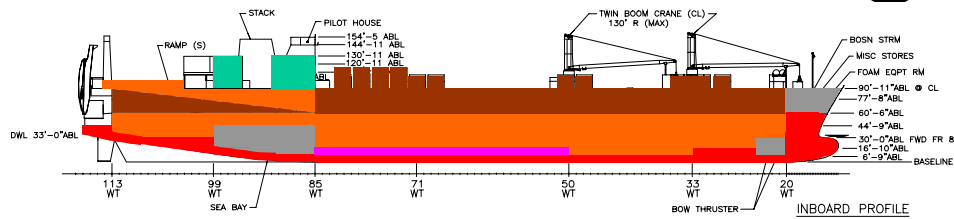


- **Step One: MPF(F) MEB support**
  - What must the platforms carry (T/E and Sustainment)?
  - Designs allow sea basing
  - Retain flexibility for Joint forces and new technology
- **Step two: Sea base connectors**
  - Air and surface craft interface
  - Organic surface craft requirements
  - Heavy cargo interface
- **Step three: Additional capability modules**
  - T-AH, T-AVB, JCC(X), MCS, AFSB, ESS

**AoA Completes FEB 04**

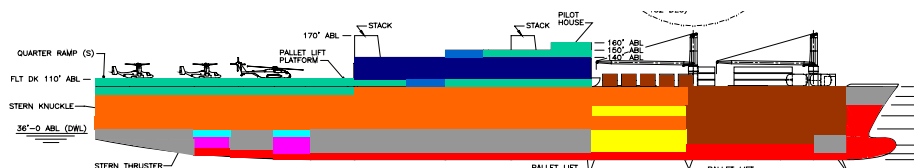


# AoA Conceptual Ship Designs



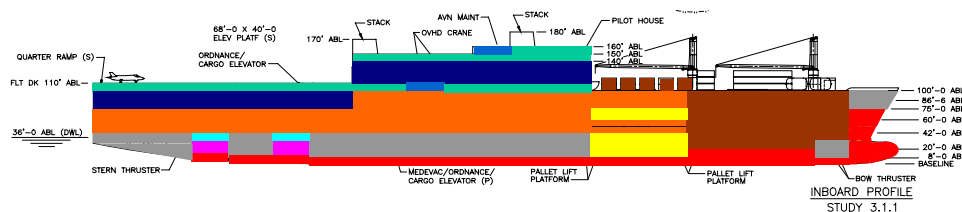
**Dense Pack LMSR (modified)**

Accommodations: None  
RO/RO square: 184 K  
ISO containers: 784  
Cargo fuel: 1.3 M gal



**Rotary Wing Capable**

Accommodations: 1655  
RO/RO square: 255 K  
ISO containers: 626  
Cargo fuel: 1.0 M gal



**Fixed and Rotary Wing Capable**

Accommodations: 2092  
RO/RO square: 235 K  
ISO containers: 628  
Cargo fuel: 1.0 M gal

## Ship Characteristics:

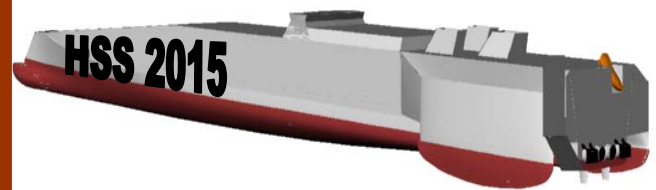
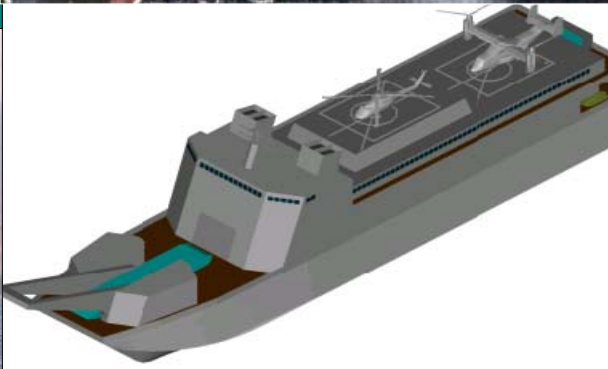
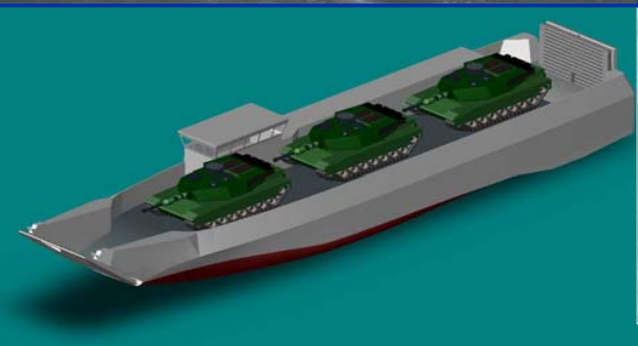
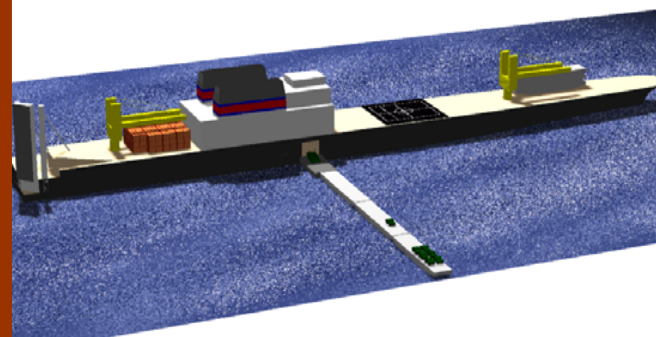
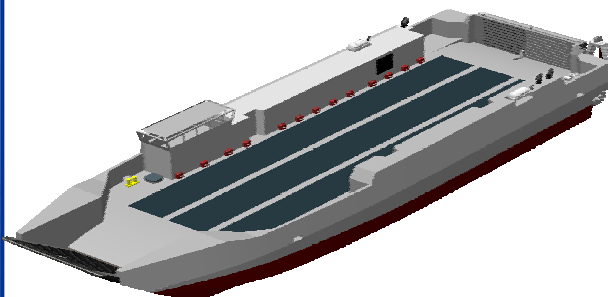
**Length overall:** 949 - 1,0363 ft  
**Beam (waterline):** 106 - 141 ft  
**Beam (flight deck):** 106- 194 ft  
**Draft (full load):** 35 ft  
**Displacement (full load):** 60,000 – 90,000 LT  
**Speed:** 24 kts

- – ACCOMMODATIONS/SUPPORT SPACES
- – HANGAR & AIRCRAFT MAINTENANCE
- – VEHICLE STOWAGE & MAINTENANCE
- – CONTAINER STOWAGE & CARGO STAGING AREA
- – PALLET & ORDNANCE STOWAGE
- – JP-5 STOWAGE
- – MACHINERY & AUXILIARY SPACES
- – MISSION SUPPORT SPACES (C4I & HOSPITAL)
- – SHIPS FUEL & BALLAST TANKS
- – POTABLE WATER STOWAGE



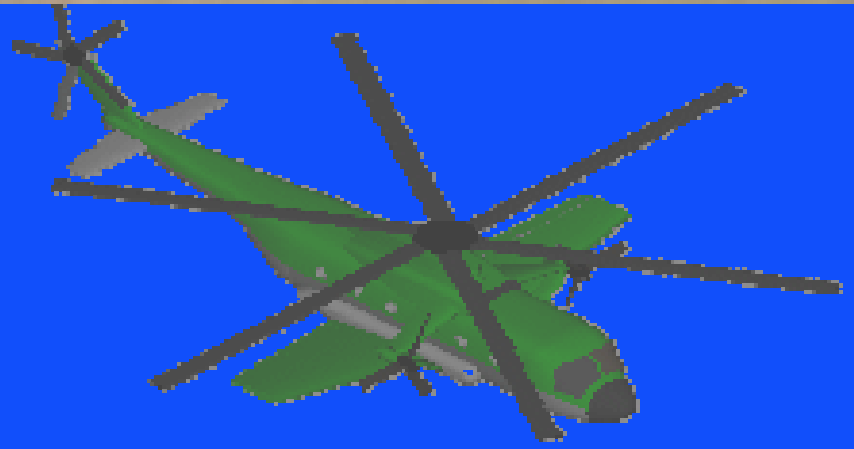


# Possible Surface Connectors





# Possible Air Connectors





# High Speed Sealift - The Challenges



# Why Speed is Important



**“Git Thar First With The Most”**  
**General Nathan Bedford Forrest**

- **Increase speed from 24Kts to 55Kts**
  - Transit time saved from Galveston, TX, to Kuwait.
    - From 17 days 5 hours / To 7 days 12 hours





# But: Inter-Theater Sealift process of many steps



- Cargo vs. Ship: Transit Time to Port
  - Presumes equipment/cargo arrives before ship
- Port Loading/Unloading
  - Number Berths/Size/Depth limit throughput
- Canal & Choke-point Transit
  - Possible escort requirement
- Reception, Staging, Onward Movement and Integration (RSO&I)

**Ocean Transit Speed is Just one part of  
Origin to Destination Timeline**



# Inter-Theater Planning Factors



## ***FSS/LMSR: Galveston to Kuwait***

### Fixed Factors

- Distance = 9,903 NM
- Ship to Port = 4/5 days
- Ship Load = 2/3 days
- Offload = 2 days
- Canal Transit = 2 days
- RSOI = 4 days
- Fixed Total = 14/16 days

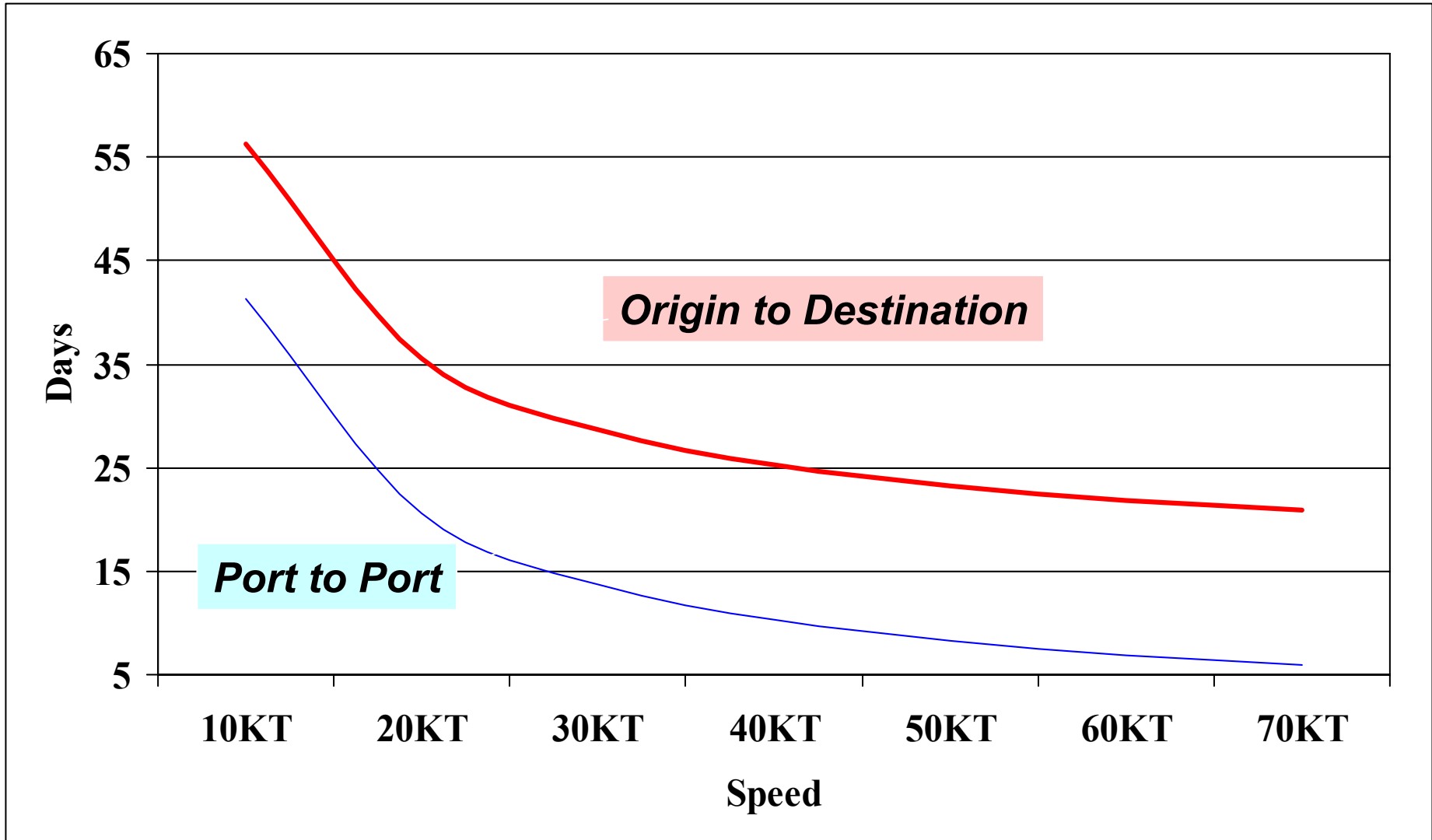
### Speed Variable

- LMSR = 24 KTs
  - 32 days/5 hours
- FSS = 30 KTs
  - 28 days/18 hours
- FSA = 36 KTs
  - 26 days/9 hours
- SDHSS = 55 KTs
  - 22 days/12 hours

***SDHSS with 2.3 x LMSR Speed Reduces Origin/Destination Time by 29%.***



# Origin/Destination & Port-to-Port Time







# Army Objective Force



- **Army Requires Shallow Draft High Speed Transport - “80-100Kt Ships”**
  - Deploy Worldwide Fort to Foxhole in 5 Days
- **Currently No Validated Requirement**
- **Army Exploring Concepts**
- **High Speed Transport Workshop Held Oct ‘97 @ NSWC, Carderock**
  - Summarize State Of The Art
  - Analyze Speed, Range, Payload, Hull Forms
  - Develop Technology Investment Plan



# Broad Conclusions From



## High Speed Transport Workshop

- Recent Commercial Development in Medium Speed Seaborne Transportation has been Significant
- No Break-Throughs in Physics were identified
- Significant Performance Improvements in Sealift Mission are possible with Technology Projections made by Working Groups



# Near-Term Technology



- **60,000 HP Gas Turbines**
- **Waterjet Propulsors**
- **Mechanical Power Transmissions**
- **Hulls of Steel**

**(Available Within 5 Years)**



# Mission Parameters Of Interest



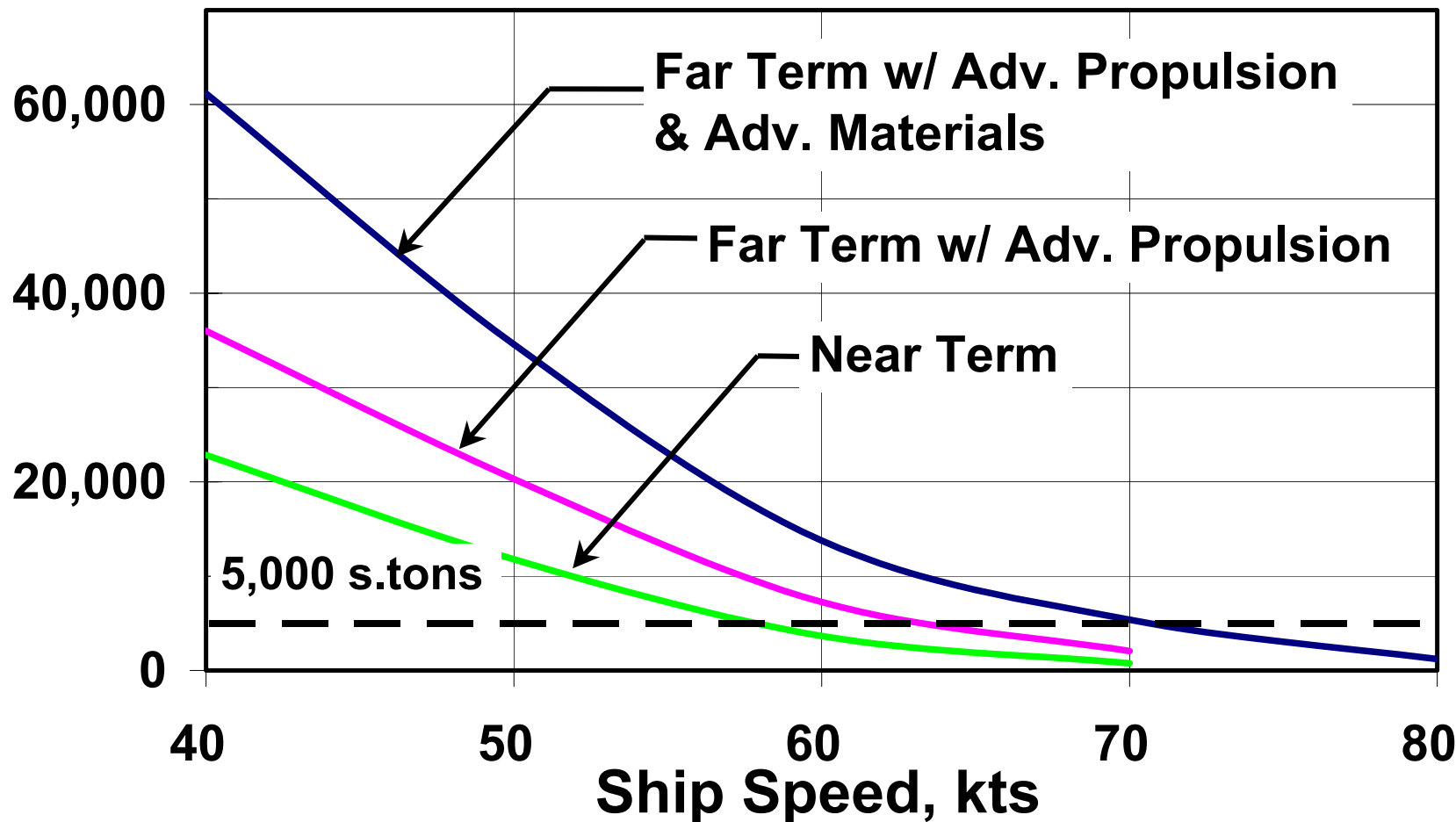
- **Speed: 40 to 100 Knots**
- **Range: 500 to 10,000 Nautical Miles**
- **Cargo: 500 to 5,000 Short Tons**  
**10,000 to 150,000 Square Feet**
- **Draft: Austere Port/Shallow Draft**  
**Discharge Capability**



# Payload Versus Speed for Range = 5,000 nm



Payload, s.tons

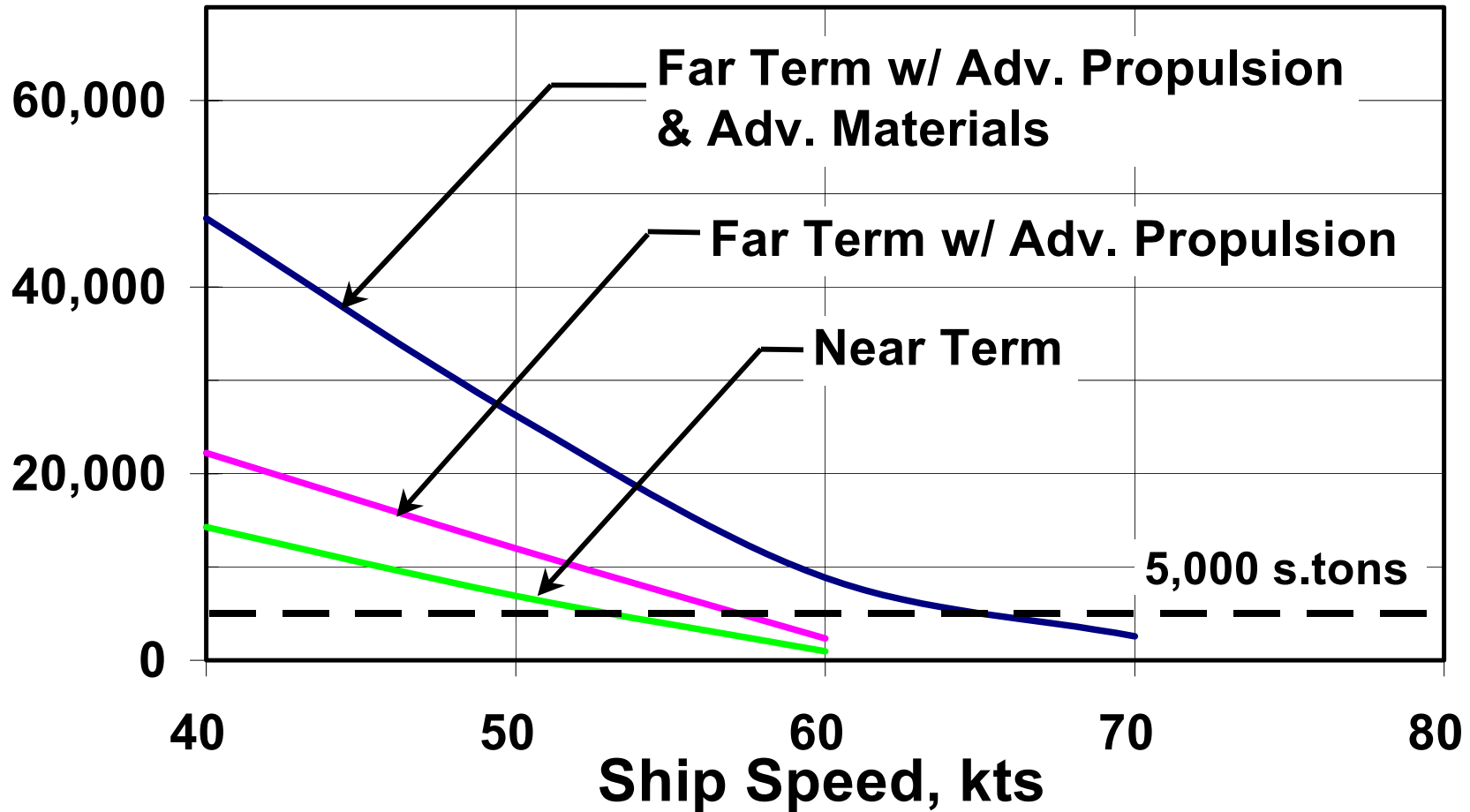




# Payload Versus Speed for Range = 9,000 nm



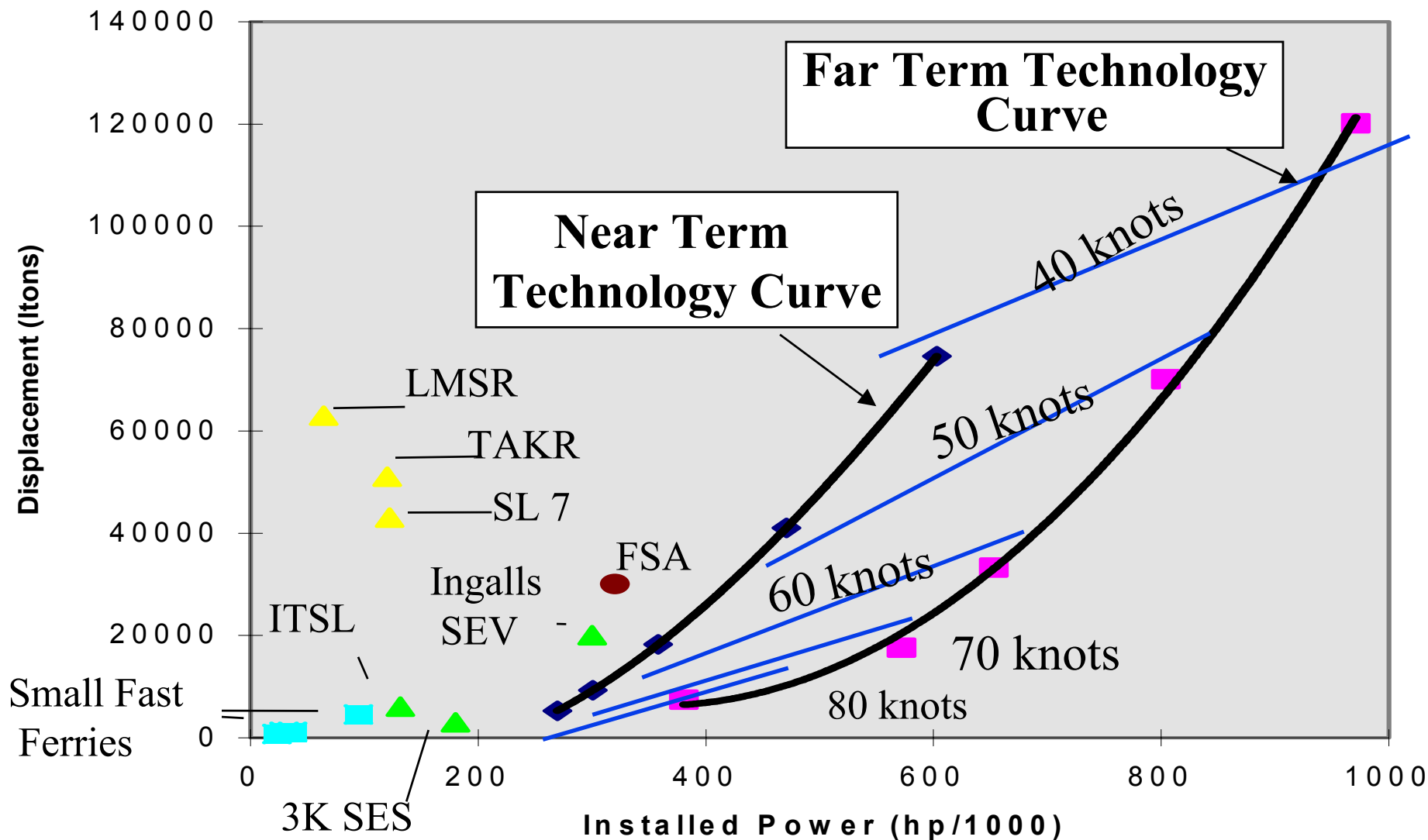
Payload, s.tons







# Ship Size/Power Implication





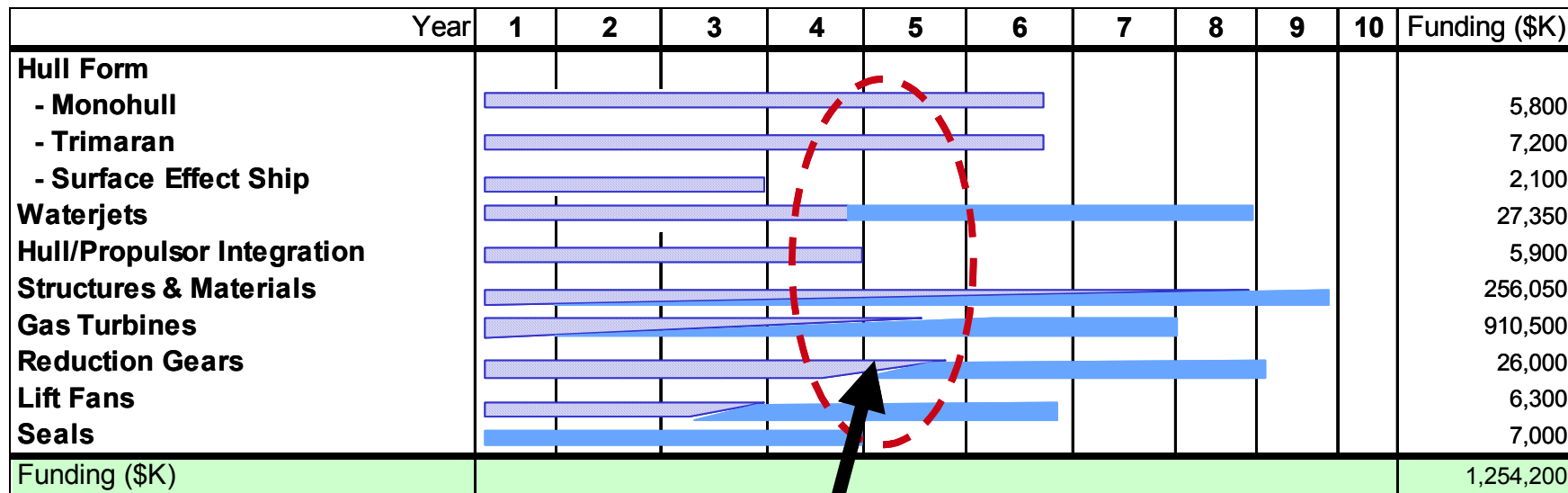
# Summary



- **Significant High Speed Transport Capability Exists in the Near Term BUT Some Solutions May Be Physically Possible But Not Cost Effective**
- **Technology Leads to Greatly Expanded Transport Capability in Far Term**
  - **Performance Impact of Structure/Material & Propulsion Technologies is Dependent Upon Speed Regime & Desired Endurance**
  - **Further Engineering Development Work Is Required to Extrapolate Performance of Ancillary Systems**



# HSS Technology Development Plan



## Large Scale Validation/Demonstrations

- laboratory test articles
- demonstrator vehicles
- commercial ships of opportunity
- technology insertions in acquisitions

**Near Term**



**Far Term**



High Speed Sealift Technology Plan developed by Carderock Division  
Naval Surface Warfare Center



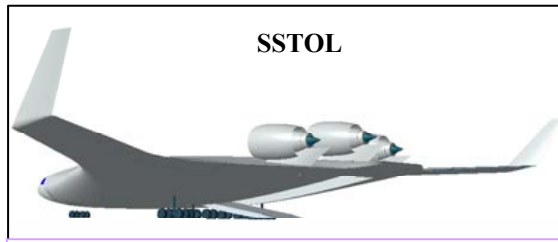
# Advanced Mobility Concepts Study Platforms



Speed - 40 KT  
Range - 1,700 NM  
Payload - 1,250 ST  
30,000 SQ FT  
350 PAX

## High Speed Monohull

Speed - 38 KT  
Range - 6,000 NM  
Payload - 8,000 ST  
158,000 SQ FT



Speed - 489 KT  
Range - 3,863 - 10,841 NM  
Avg Payload - 149 ST  
500 PAX



Speed - 76 KT  
Range - 5,607 - 10,000 NM  
Avg Payload - 238 ST

## Mobile Offshore Base



Speed - 12 KT transit  
5 KT connected  
Avg Payload - 5 M SQ FT  
15,000 PAX  
2.5 M SQ FT Flight Deck  
5,000 FT Runway

## Shallow Draft High Speed Sealift



Speed - 75 KT  
Range - 7,000 NM  
Avg Payload - 4,400 ST  
86,489 SQ FT  
1,000 PAX

## Global Range Transport



Speed - 380 KT  
Range - 3,100 - 4,700 NM  
Avg Payload - 30 ST  
20 PAX



# AMCS Insights



- **Shallow Draft technology should be pursued.**
  - Number one concept in Phase 1 and 2.
  - Closes the gap between airlift/sealift.
  - Reduces dependency on deep-draft ports and allow multiple entry points
- **TSV provides high value for intra-theater movement, especially in anti-access area-denial environment.**
- **Fast deep-draft vessels also provide benefit when infrastructure available.**
- **Additional study of world-wide seaports would better define capability of vessel concepts.**



# AMCS Recommendations



- OSD consider follow-on technical readiness, cost, and port analyses to include appropriate direction in POM DPG-06 to initiate Research Development Testing & Evaluation (RDT&E) on Shallow Draft High Speed Vessel, Theater Support Vessel, Super Short Take-Off and Landing aircraft, Global Range Transport, and Joint Rapid Airfield Construction.
- Conduct an excursion to the next Mobility Requirements Study that considers transformed forces and mixes of advanced and current lift in the 2020 timeframe.



***FastShip Inc.***





# *FastShip* *Artist's Conception*





# ***FastShip NDFs***



- **Moderate-sized Commercial Vessel Developed To Dramatically Improve Ship Service For High-Value Time Sensitive Cargo.**
- **Semi-Planing MonoHull Design**
  - 36 -38 Kts / 300KHp
  - 35,000 Displacement Tons
    - Approx. 10,000 LT payload
  - 4,000 -10,000 NM Range
- **Specialized Horizontal Ro/Ro Loading System = Reduced Ship Turnaround**
- **Capable of High Speeds in High Sea States**



# ***FastShip NDFs***



- **NAVSEA/OPNAV/FastShip, Inc.**
- **Military Utility**
  - 9,000 LT Payload
  - 8,700 NM
  - Approx 20 Day Round Trip (LMSR = 34 Days)
- **Study Applicable NDF**
  - Concentrate On Speed/Range/Payload
  - Reduce Load/Unload Characteristics = Minimize Turnaround Time
  - Capitalize On Smaller Size and Draft - Accessibility To Smaller/Underdeveloped Ports



# ***FastShip In-Stream Transfer***



**In-Stream transfer in sea state 3  
(4FT Significant wave height)**

## **FastShip Unique Advantages**

- High Initial Stability against Rolling
- Integral static Anti-Roll flume system
- Ballast system allows FastShip to level with Intra Theater Support Vessel (ISV)
- Wide Stern Provides Effective Lee for ISV

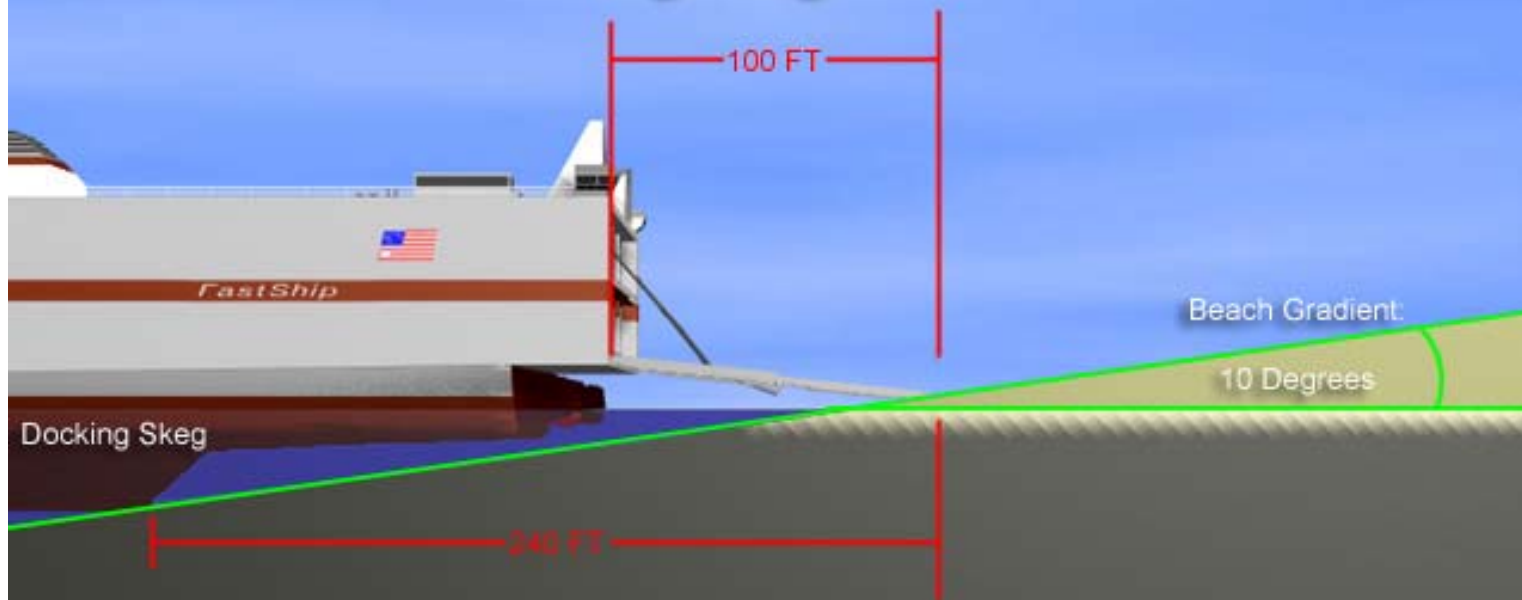




# ***FastShip Direct Discharge To Beach***



**Direct Discharge to beach requiring minimum 10 degree gradient**



## **Main Features**

- No propellers or appendages: vessel is backed up to beach using retractable azimuth thrusters protected by docking skag
- Length of ramp plus extension = 100FT
- Length from extension ramp to docking skag = 240FT
- Depth at docking skag = Approx. 35 FT

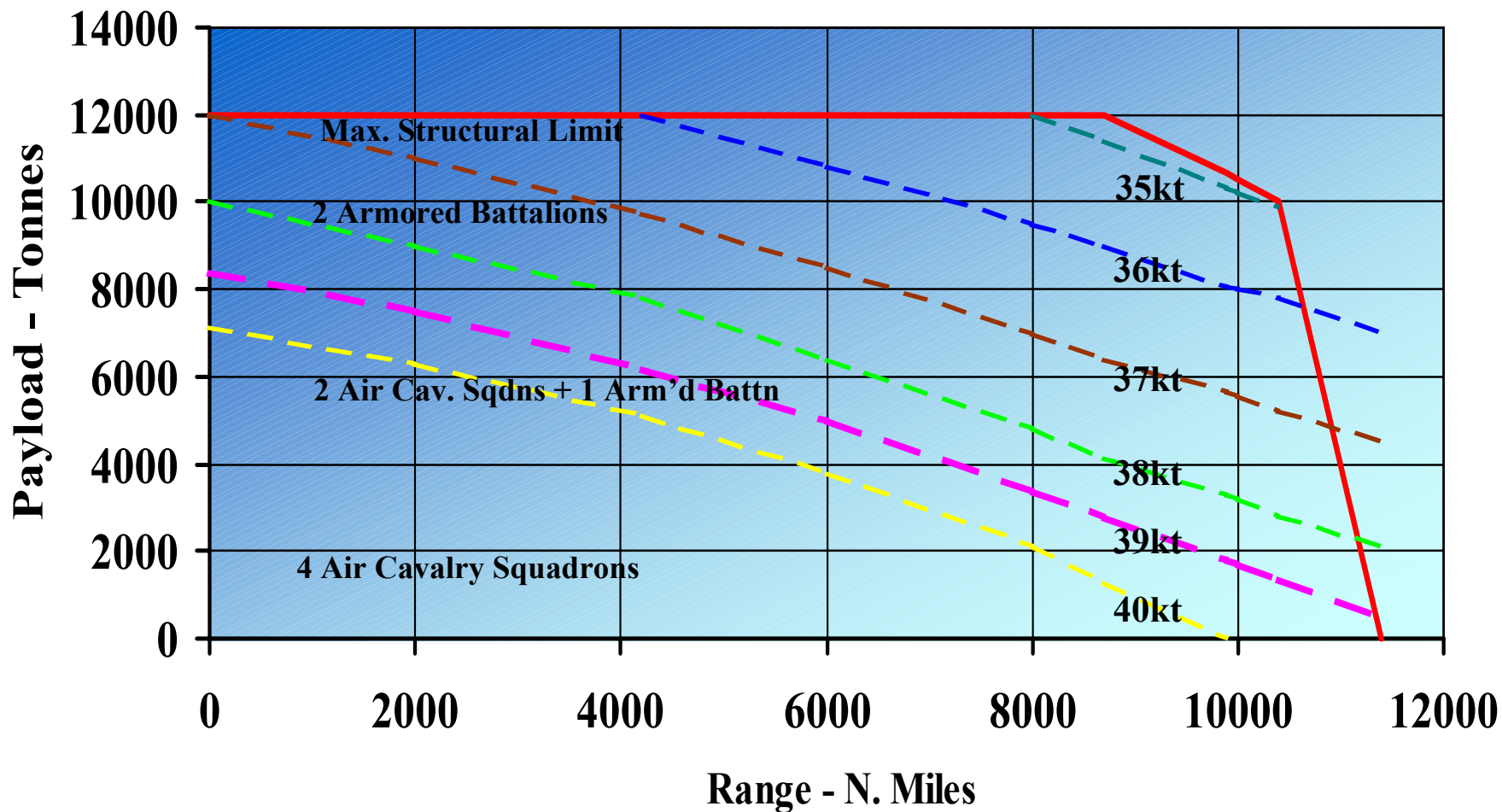




# FastShip – Military Payload Vs. Range



1.5 Metre Sig. Wave Ht., Head Seas, 40 > 35 knots

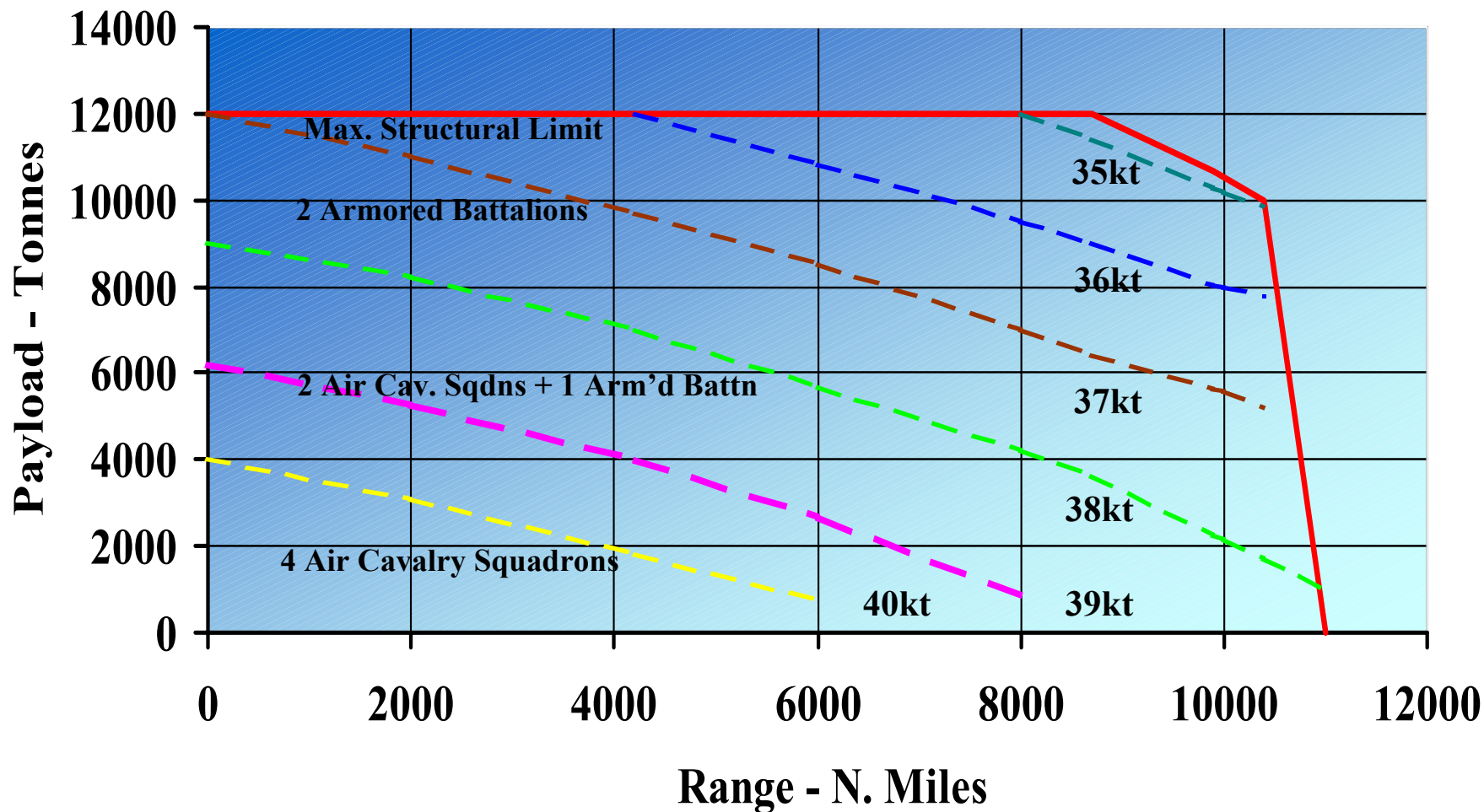




# FastShip – Military Payload Vs. Range



4 Metre Sig. Wave Ht., Head Seas, 40 > 35 knots







*Questions?*





# BACK UP



# Power Projection Platform Upgrades $\neq$ Port Upgrades



50% increase in  
Rail Loading  
capacity at Ft Hood  
due to rail head  
upgrades



**FT HOOD**  
**CORPUS**  
**CHRISTI**

**BEAUMONT**



*Choke Point –  
Rail Capacity*

**Bottom Line:**  
- Synchronize  
- Communicate  
- Port Calls



**Need to Improve Fort-to-Port Infrastructure**



# MTMC OIF Concurrent Surface Operations



★ Operations at 13 Power Projection Platforms

★ Operations at 26 Seaports

★ Coordinated the Movement of Over 18,000,000 Sq Ft

★ Over 18,000 Ammunition Shipments Moved to the Ports

★ 50 Stevedoring and Related Terminal Services Contracts/BOAs In Place

★ Over 17,000 Railcars Moved Through Commercial Ports

★ Worked Over 199 Vessels Connected With Operation Iraqi Freedom

★ Over 108,500 Truck Shipments Moved to Ports

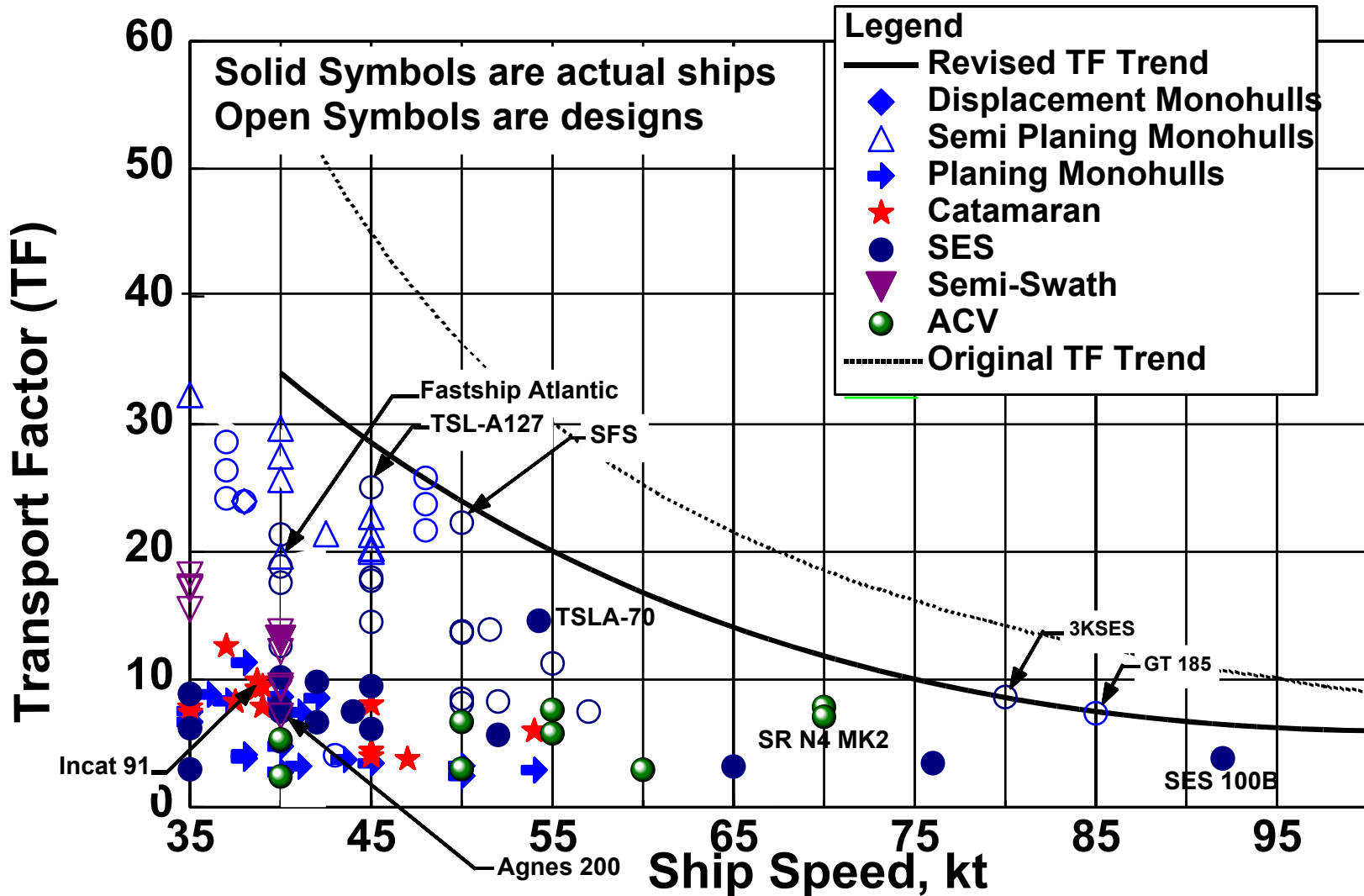


**Leverage all Modes of Transportation**





# Transportation Factor Curve

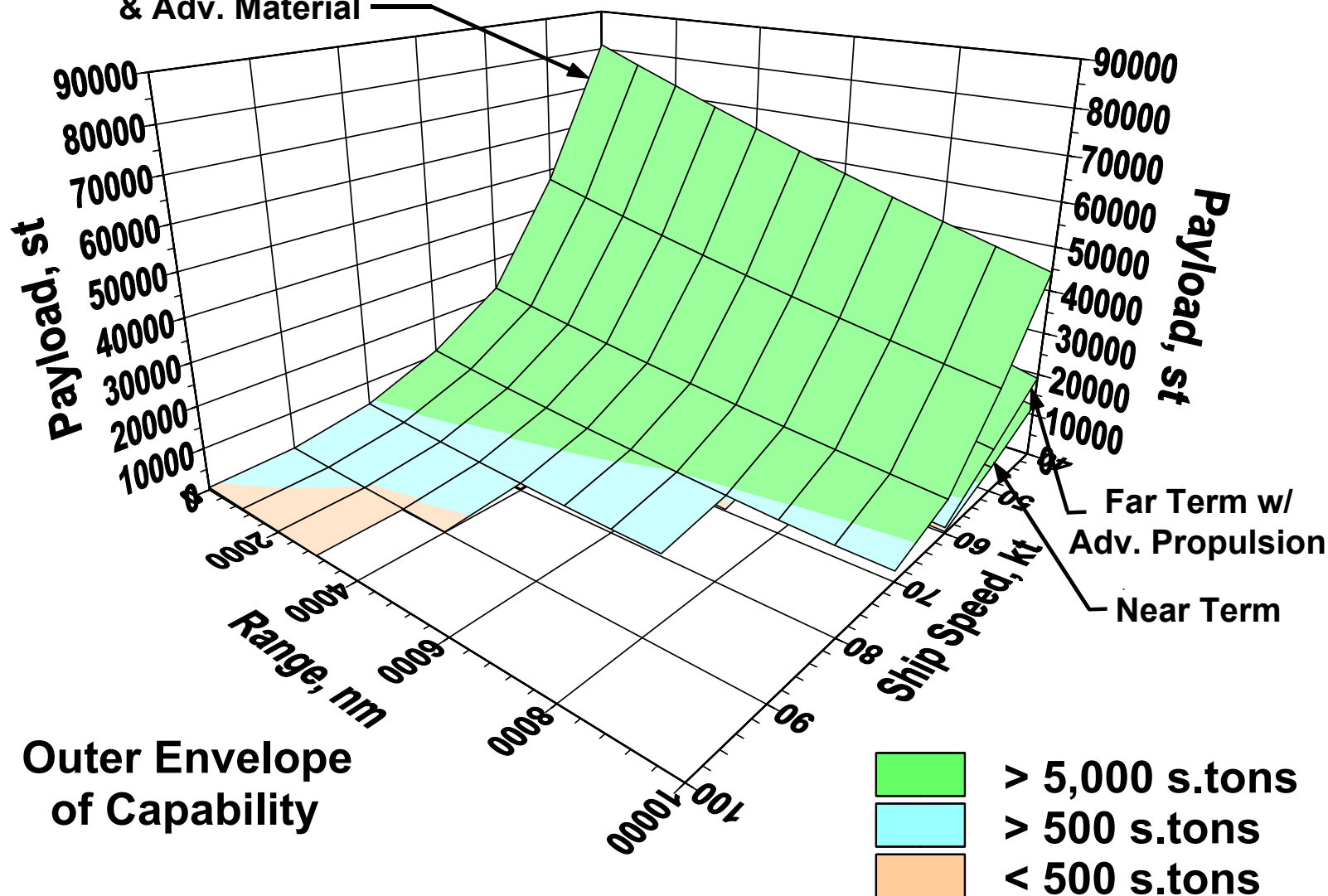




# Near and Far-Term Results



Far Term w/ Adv. Propulsion  
& Adv. Material

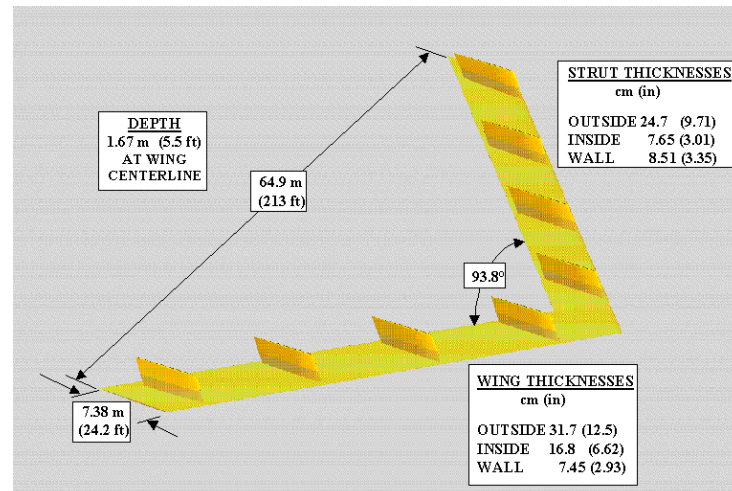




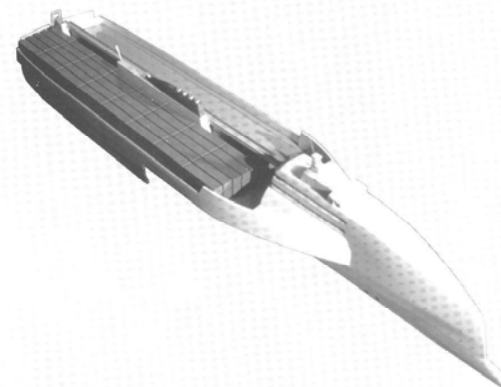
# Challenge: Recapitalize Organic Fleet ONR's Fast Ship Program



**PACIFIC MARINE**



**LOCKHEED MARTIN**



**BATH IRON WORKS**



**VIBTECH/HARLEY**





# **FUTURE OF HIGH SPEED SEALIFT**



- **High Speed Sealift/Agile Port Executive Steering Committee**
- **MOA Between: OPNAV (N42), NAVSEA (PEO EXW), US Army, US Transportation Command**
  - ◆ **Share Information and interests**
  - ◆ **Integrate Operational Concepts and Requirements with Technical Development**
  - ◆ **Expedite acquisition**
  - ◆ **Assess progress towards goals**
  - ◆ **Coordinate R&D and investment programs**



# HIGH-SPEED SEALIFT TECHNOLOGY DEVELOPMENT ROADMAP



## HSST WORKSHOP

*post workshop  
analysis*

- technology assessments
- near and far-term projections
- performance predictions

## TECHNOLOGY INNOVATION TEAM

- User requirements
- parametric studies
- synthesize technologies
- total ship concepts
- technology shortfalls

## TECHNOLOGY DEVELOPMENT PLAN

- technology priorities
- investment POA&M

## STUDIES

- ship size impact
- machinery plant
- cargo handling
- structural concepts
- cargo density
- prior TDP review

## ADVANCED MOBILITY CONCEPTS STUDY

- SDHSS
- Monohull HSS



# Mission Summary

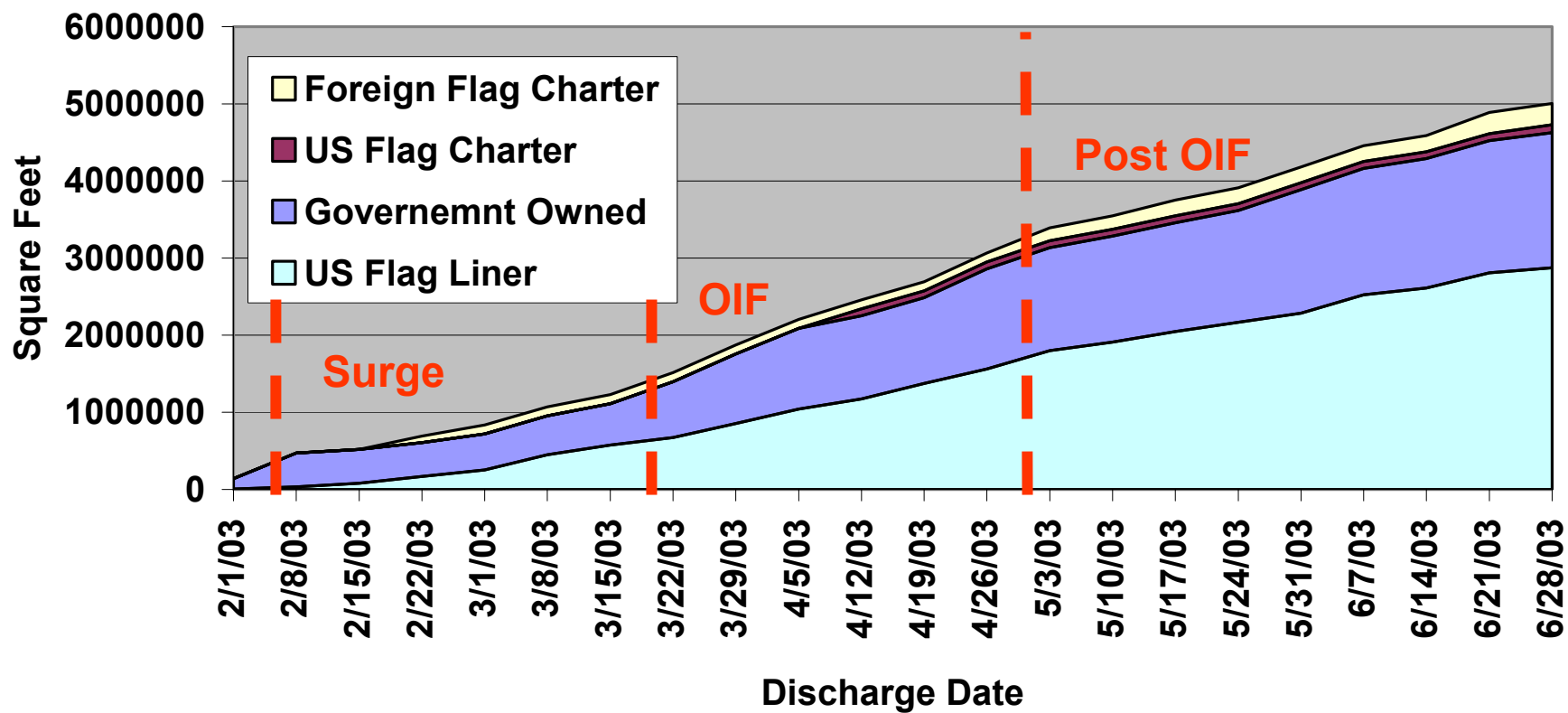


	Shuttle Ship 1a	Shuttle Ship 1b	Intra-Theater Support Ship 2a	Intra-Theater Support Ship 2b	Coastal Commercial Ship 3	Trans-Ocean Commercial Ship 4a	Trans-Ocean Commercial Ship 4b	Inter-Theater Ship 5
Average Speed (knots)	40	45	40	40	50	50	60	40
Full Performance Wave Height (m)	2.4	2.4	2.4	2.4	2.4	4	4	4
Range (nm)	1,250	1,250	800	1,200	1,500	4,000	4,000	5,000
Payload (mt)	1,497	1,497	454	454	1,500	7,500	7,500	5,445
Ramp Requirements	y	y	y	y	n	n	n	y
Total Crew	20	20	20	20	20	30	30	30
Structural Technology	current	current	current	current	current	far	far	near
Waterjet Technology	current	current	current	current	current	far	far	near
Prime Mover Technology	current	current	current	current	current	far	far	near
	Vision Ship 70 knots 6a	Vision Ship 60 knots 6b	Vision Ship 55 knots 6c	Vision Ship 5,000 st 7a	Vision Ship 7,500 st 7b	Intra-theater Ship 8	Logistics Ship 9	
Average Speed (knots)	70	60	55	55	55	40	50	
Full Performance Wave Height (m)	4	4	4	4	4	2.4	2.4	
Range (nm)	5,000	5,000	10,000	8,700	8,700	800	1,000	
Payload (mt)	4,537	11,797	11,797	4,537	6,806	1,312	726	
Ramp Requirements	y	y	y	y	y	y	y	
Total Crew	30	30	30	30	30	20	20	
Structural Technology	far	far	far	far	far	near	near	
Waterjet Technology	far	far	far	far	far	near	near	
Prime Mover Technology	far	far	far	far	far	near	near	

**High Speed Sealift Technology Plan developed by Carderock Division  
Naval Surface Warfare Center**

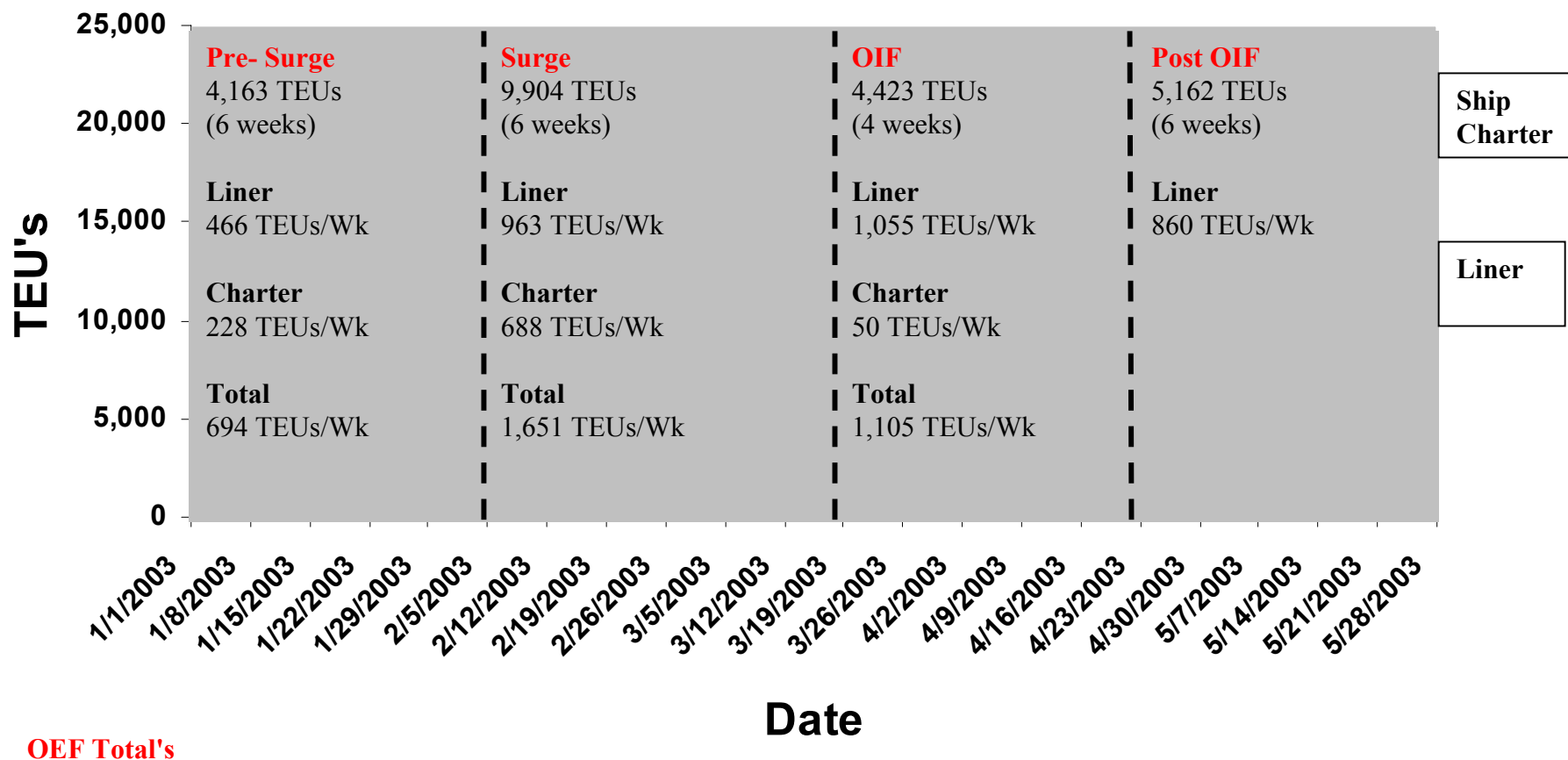


# OIF Closure



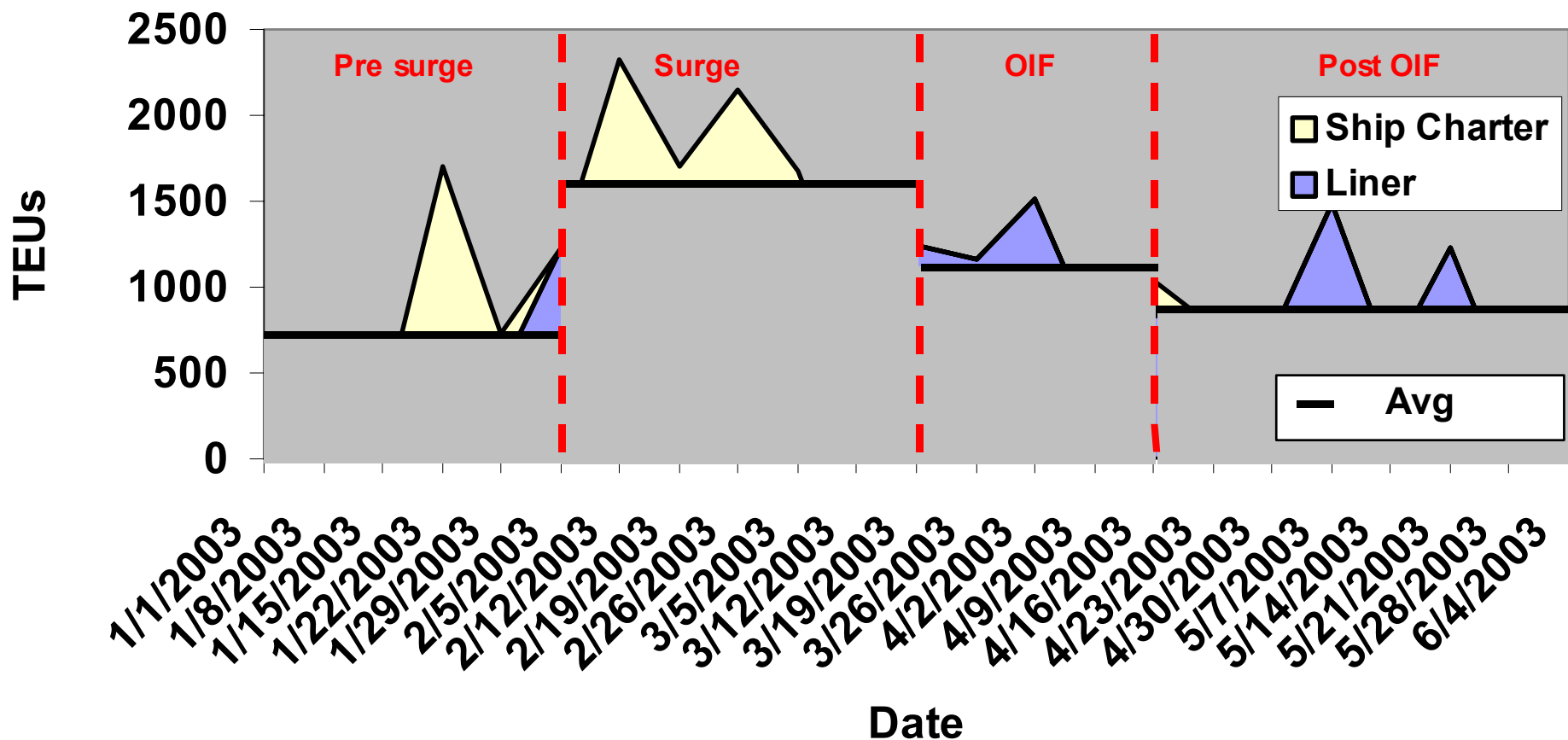


# OEF TEUs Shipped from CONUS



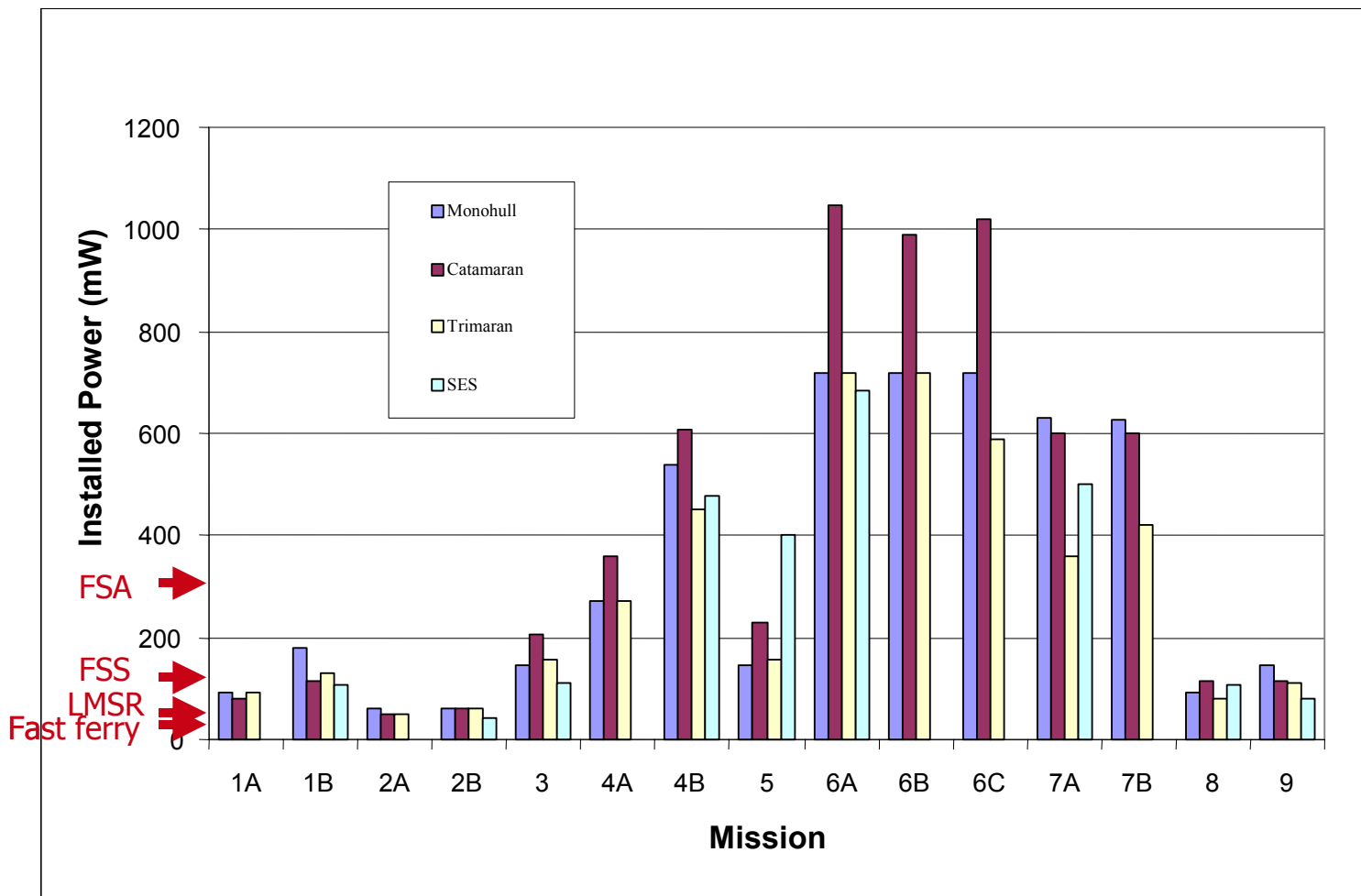


# OEF TEU Flows from CONUS





# Installed Power of HSS Designs

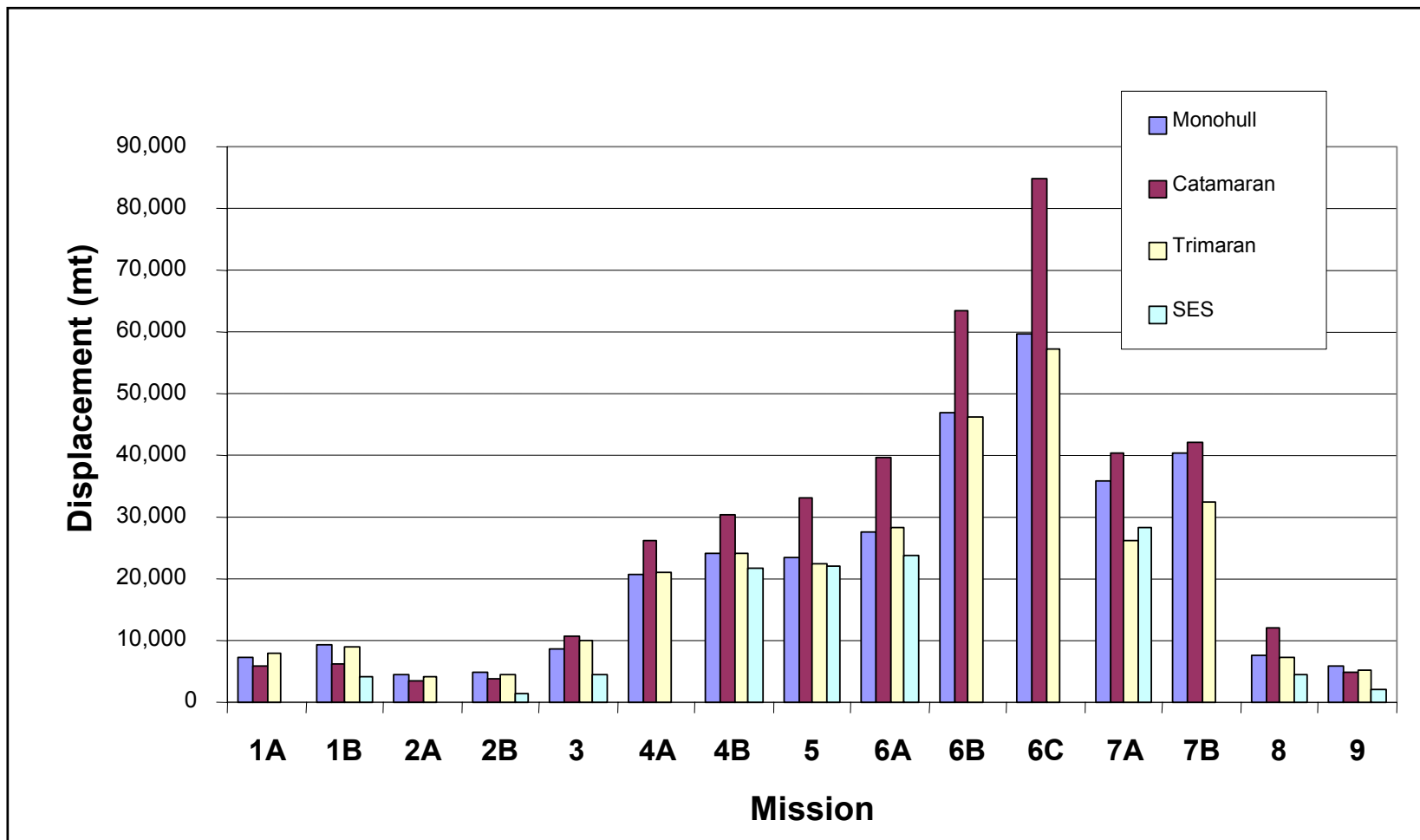


High Speed Sealift Technology Plan developed by Carderock Division  
Naval Surface Warfare Center





# Full Load Displacement of HSS Designs



High Speed Sealift Technology Plan developed by Carderock Division  
Naval Surface Warfare Center